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The Course of Study

A MONTHLY PUBLICATION FOR TEACHERS
AND PARENTS

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The Chicago Institute

ACADEMIC AND PEDAGOGIC

JULY, 1900

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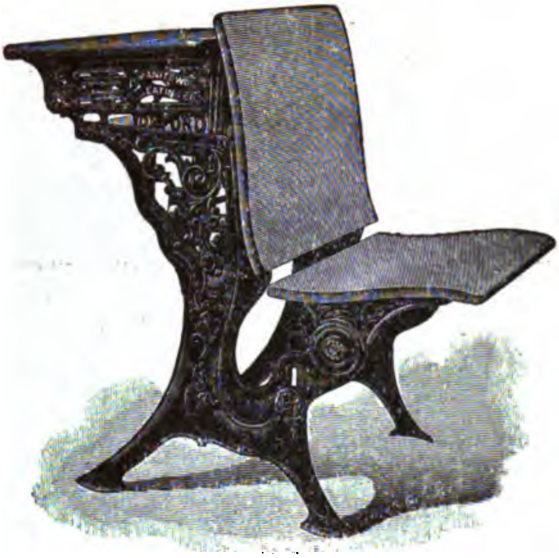

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THE COURSE OF STUDY.

A MONTHLY PUBLICATION FOR TEACHERS AND PARENTS.

The Plan and Purpose of the Chicago Institute

President Francis W. Parker

IN ORDER to determine properly the position assumed by the Chicago Institute in matters pertaining to popular education, and to make its aims and plans more intelligible, it is necessary to consider carefully the ideal which shapes and controls the proposed work. The following statements are prepared, therefore, for all those who are interested in popular education. Especially are they intended for parents who desire to give their children superior advantages in self-development, and for those teachers who wish to avail themselves of such opportunities as the school affords.

Educational methods are dominated mainly by one or the other of two diametrically opposed ideals: the one, the prevailing ideal of knowledge* and skill as the central purpose of education; the other, the ideal of character, embodied in citizenship, community life, complete living. The former demands the acquirement of certain stated quantities of knowledge, the amount and value of which is determined at intervals by examinations and estimated in per cents.

An ideal determines and controls all methods and means that go into its realiization. Under that of knowledge, pupils and teachers concentrate their energies upon the learning of the pages of books, upon certain facts, rules, definitions, processes, and manual skill. The examination, the promotion, and the diploma lead the way, and the essentials of complete living are left in abeyance or to accident. The evils naturally growing out of such ideals are often relieved, however, by the presence of a child-loving, sympathetic teacher, whose personality is superior to defective methods.

The reason why there have been so few student-teachers engaged in constantly studying the child and his needs is that knowledge-gaining requires but few methods; that drill has been the rule, and teaching the exception. There is no "vista of fair things before," no continuous incentive to study, to a school-keeper wrestling with words and high per cents. The cramming process leads to the *en bloc* treatment of children. They are required to learn the same words, to submit to the same examinations, and are promoted at the same time. In the struggle the weak despair, the strong become conceited, and few indeed are educated.

These facts, relieved by many ameliorating circumstances, fairly show the education for which the State spends its millions, and which furnishes the early training for the citizens of our republic.

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* Lest any one should interpret these statements as a depreciation of knowledge, it may be well to add that such an inference is in utter opposition to the writer's intention. It goes without saying that knowledge is as essential to the mind as food, blood, and breath are to the body. Knowledge is mental nutrition, upon which all human action depends. But there is a vast difference between storing up facts for future uses unknown and unappreciated by the pupil, and acquiring knowledge under the incentive of immediate use. Knowledge as an end, or learning for the sake of learning, puts knowledge at its lowest value, while knowledge for expression, use, helpfulness, glorifies learning by making it a personal necessity.

That character is the noblest outcome of human life is the opinion of all mankind. Codes of ethics, giving common rules of conduct, differ but little from each other. How, then, since character is prized as the intrinsic thing in life, have we so far lost sight of it in education?

It is far easier to follow conventional methods, tracks laid down in the remote past, than it is to break through the bounds set by tradition, and enter into a new light and a new life. The people do not readily change that which has been wrought in them by all the past. The circumstances of our government and society have been unfavorable to the radical changes here proposed. Ideal education into citizenship, until within a few years, has not been possible, even in our own country. The theory of character as the ideal in education is plain, simple, and universally recognized. The practice of the theory, however, requires a decided change in public opinion as to the nature of school work, and above all a radical change in the use of knowledge in the schoolroom.

The ideal school is an ideal community. An ideal community is a democracy, in the purest sense of that pregnant word. Character, constantly realizing itself in citizenship, in community life, in complete living, is the immediate, everlasting, and only purpose of the school. A day filled with refreshing life mirrors the new ideal.

The Chicago Institute has been founded to meet the growing demands for educated, efficient teachers and leaders in all grades of both public and private schools. The purpose of the Academic School is to demonstrate the value of character as the one end and aim of education. While not committed to the defense of any fixed educational creed or dogma, it is the intention to base the work upon the proposition that character, immediately expressing itself in terms of citizenship, of community life, of society in its best sense, in short, that complete living is the one aim and end of education for American children. This grows out of a belief:

1. That the knowledge acquired through an understanding of its immediate value and use in society is incomparably better than that gained by making the knowledge an end in itself.

2. That the true ideal of community life brings all the human energies into full play and righteous exercise.

3. That order, harmony, and brotherly love grow from within and develop under proper environment and inspiration into spiritual life; that these inherent attributes become organized in character as necessities derived from the relationship of the outer demand to the inner needs.

4. That present good is everlasting good. The citizenship of to-day, if good, becomes better to-morrow.

5. That the duties of citizenship should become life habits. Thinking, working, and doing for others cultivates those qualities, the lack of which now threatens our existence as a republic.

6. That if time and toil are to attain the highest possible results, there must be the greatest economy of effort.

7. That the right environment of the child brings the good in him into full activity and allows the bad to die of disuse.

8. That through a proper development of selfhood the tendency to selfishness may be banished.

9. That every child, through the use of his knowledge and skill in the help of others, may feel at once and always the highest purpose of life and living.

10. That such an education is absolutely moral in its every step of development.

Educative concentration is the bringing to bear of all proper means to realize character in complete living. Knowledge-gaining as an end dissipates the energies of a teacher and of a faculty, but character as the ideal concentrates and unites them. Concentration in this sense leads to the search for that knowledge which best nourishes the activities of the child at every stage—for that knowledge needed for use, which is usable at every step and becomes everlasting in its use.

Knowledge is glorified by its function. What blood and breath are to the body, that is knowledge to the spiritual life—not an end, but an intrinsic means. One question is ever before the teacher, Is the pupil made better through the use of his knowledge and skill?

Correlation is the inevitable outcome of concentration; it is the universal rule in all affairs except in education. The architect, for example, puts into the edifice all things in their proper place and proportion; brick, mortar, iron, stone, wood, and glass go where they are needed. But in the ordinary school the materials designed for the social structure are tumbled together in a promiscuous heap.

Since concentration and correlation are fundamental doctrines of the new school, it is proper to indicate in some detail how the work planned for the institution will be organized so that the children and older students may have the best means of developing their bodies and minds in educative play and work.

The Faculty In the outset it is recognized that the intrinsic worth of any school lies in the quality of the work done by its teachers. It is the design of the Chicago Institute to bring together experts in the profession of teaching. The faculty will form a compact organization for the purpose of studying together the practical problems derived from modern educational needs, and of applying the results of their study in the actual work of the classroom.

The head of each department will have charge of the psychology and pedagogy of his subject. Every teacher is to contribute toward the realization of the ideal of the school all he is, all he knows, and all he can do. He is to penetrate the whole faculty with his ideas, demonstrating in theory and in practice the educational use of his subject and its relations to all other subjects taught. Such investigations will have in view the gradual development of an American policy in education, under which may be realized the highest ideals of life in the republic.

The majority of the teachers selected have been members of the faculty of the Cook County and Chicago Normal School, some of them for a period of ten years or more.

General Plan It is proposed, therefore, to devote much attention to all the problems relating to social life, to instruction, and to school management, which arise in work done in the elementary, grammar, and secondary departments of the Academic School; to study the child and supply his needs, and in doing so to cultivate in him the highest ideals of which he is capable.

Under the domination of mediæval ideas and methods, the outcome of social and governmental conditions very different from our own, the school life of the child is often barren and empty. It is entirely reasonable that life from the beginning should be full and rich ; that it should be full of work and play, and rich with the best that society can bring. Ordinarily, the child has two streams of thought, one rising in the home and the other in the school. These streams rarely join, but flow in parallel lines, the one full of bounding life and absorbing interest, the other weak, fluctuating, and often interrupted or obscured by the volume and genuine vigor of the former. The reason for this is that school life, as a rule unnatural and abnormal, does not appeal to the best instincts and intuitions.

Education into freedom implies a recognition of the pupil's right to the privilege of initiative. Because of this, it is sometimes charged that the new education believes in merely amusing children by truckling to whims. There could be no greater mistake. Play and amusement are educative, and deserve a place; but the new education recognizes educative work as being something different, but absolutely essential to true and healthful growth. It merely proposes that the pupil, first and last, shall acquire in a natural manner, and shall constantly deal with, images of genuine value. Such images are essential because they always create a desire in the pupil to put himself into life, and they drive him into an immediate attempt to do so. The school environment, therefore, should arouse in the child that which is best. As a member of a co-operative community in which each little citizen feels himself to be influential, the child is led to become a student of the best interests of all.

Subject-Matter for Study There are two main subjects of study—man and nature. The two are really one in the realm of creation. There are no dividing lines across this domain, except those drawn by man, sometimes for convenience, but more often through ignorance and conceit. Subjects have been classified and isolated in the past under the ideal of making knowledge the end of education. Under the character ideal they are correlated, and science, geography, and history, and all that they include, are really one. Each study is thus made to enhance all the others. The child begins no new subject, for subjects are always new; nor does he ever drop a subject because it is old. One step leads to another, and the answer to one question becomes the opening to a new one. The child finds for himself every possible thing, and his investigations are encouraged.

What Shall Children Study? All thinking which represents growing life has its infinite source in the study of man and nature. The child begins with eager observations in the home and in society, in the fields and the woods. These fill his growing mind with activity; he learns, imitates, originates; he enters school with senses in full tide of action. With mind healthy and ready for knowledge and expression, shall the environment of the child be changed radically from a natural to an artificial one? Shall his real life be cast aside, and his thoughts and his knowledge be left in abeyance? Or, shall the teacher use what the child is and what he can do in the further expansion, enrichment, and interpretation of his natural environment? As to this, in theory at least, there seems to be no question. The child should have that which he can apprehend, assimilate, and use. The school which he enters should be a broader and deeper life. Stimulated by companionship and by social demands, directed by his teacher, his soul longs for that knowledge which he can use for the good of others.

What shall be the source of his nourishment? That knowledge which is related to what he already has and what he needs for immediate use. Such knowledge alone is nutritious. As his senses develop and his powers unfold, the pupil's observation improves. In school the subjects of man and nature must be continued, and should be made more educative, because the teacher is there. The child must feel that all he has ever learned, all he has ever done well, is a part of his education; that he is learning at home when he is helping his mother, doing work that makes home more comfortable, happier, and better. Home life and school life thus become one in direction and purpose.

On the other hand, in expressing himself, in realizing himself in his attempts to put himself into life, the pupil must make use of all the means that have yet been devised by the race. The different modes of expression have no mental or moral value in themselves. Everything depends upon mental activities aroused by these processes. They may be used as forms, and as forms alone. They may express low, vicious thought, or they may be means of developing by their action and reaction the highest and best thinking. The different subjects of study, therefore, are all absolutely essential to the child's development.

The answer to the question, then, What will the children study in the new school? is very simple: Everything they study anywhere else. There may be a vast difference, however, in the manner and in the purpose of the study.

Reading The pupils will use reading from beginning to end, for reading is one of the chief means of developing educative thought. Without reading there can be but little progress in education. But instead of spending weeks and months and years in learning the formal part of reading for the sake of reading, with little or no thought, the child learns to read when the printed words best help him in thinking. Behind the purely formal reading there is little or no thought; the incentive is small, the interest slight, and the purpose feeble. The impelling power is left out, and, therefore, learning to read is made long and tedious. It has been found that children can learn to read as they learn to talk, and we know they talk when they have something to say. Instead, then, of the child's being plunged into a labyrinth of empty words, his mind is aroused and quickened by vital, interesting thought in science, geography, and history, and out of these in a perfectly natural way come the learning to read and the reading.

Writing All writing should express educative thought, and that this may be unobstructed, the pen must move with perfect ease and freedom. Correct writing includes spelling, grammar, capitalization, and punctuation. Instead of learning the formal rules and definitions of grammar as a preliminary, the child should use language continually in writing and speaking. Spelling, as well as capitalization and punctuation, is learned by expressing thought correctly. He learns the correct forms of language by using them. He cultivates style while writing under the criticism and correction of the teacher. Writing may be used, therefore, from the beginning as a direct means of thinking.

Mathematics The whole universe is undergoing incessant changes. From the smallest that momentarily occur to those that may be spanned only by infinite lapses of time, the presence of force is suggested and implied. The study of nature becomes eventually the study of force, and this can be imaged only by the aid of mathematics. Furthermore, it is by this means alone that the industrial and commercial relations of man can be properly determined and permanently established. Environed, therefore, by a life whose facts and phenomena must be constantly numbered and measured, as the pupil is permitted to become a real partaker in that life, there will be less and less excuse for his time being so completely absorbed by meaningless problems, by the thousand and one devices, mere tricks of the hour, that fill the arithmetics now in use in the schools. The old traditions of arithmetic-teaching, which deal mostly with the nature of processes, possess the schools, and hold the minds of most men as in a vise, and cannot be gotten rid of in a day. But mathematics should be treated from the beginning as a means of enhancing thought that is worth the thinking in the immediate present.

What is said of mathematics in general may be asserted of all its divisions. In the proper study of form, and in the determination of relations, the elements of geometry and algebra take an important place in early education.

Art Art is doing well anything that is worth doing. The great saying, "He that doeth the will shall know of the doctrine," is fundamental in education. There must be actual and effective expression of thought through the bodily agents. Form is a universal means of manifesting thought. Through form we study energy, but form is a means, not an end. Modeling is a direct means of the study of form in all subjects. Color is the emphasis and ornament of form, and painting offers the best means of studying it. It is a study of form through tints and shades. Drawing requires the analysis of form. Art will have a great place in the new school.

Manual Training Every nerve center in the body demands manual training. It develops the mind and at the same time strengthens purpose, for all things made should enter into the life of the little community and into the life of the home. Children delight in manual training, because they love to make things, and to make them for others. The children will enter manual training in the kindergarten and carry it through all the grades.

Physical Culture The health and vigor of the children and of the students is all-important. A strong, supple body in which all the organs perfectly perform their functions; a body that feeds the brain with blood for the highest thought and complete action; a body under the domination of the will and readily responsive to it; a body that wards off or conquers disease, and makes the highest and most prolonged self-activity possible—such a body is the sure foundation of all that is good and right. Physical exercise in the gymnasium and out in the free air, in concerted work, and in individual and corrective movements, is to be the basis of the bodily refreshment of the school. Sports and games bring children close together in wholesome rivalry and hearty sympathy. Educative play banishes class distinctions, and the individual stands out for what he is really worth. All the exercises of the school are to be made essentially conducive to health and personal vigor.

Music and Speech The child enters school with gestures in full play, with a certain command of speech, and often with some skill in music. These modes of expression have been acquired spontaneously in meeting the needs and instincts of the child. Dramatic speech and music have a prominent place in expressing the emotional nature, but they, as well as all other modes of expression, are worthless unless they represent the actual feelings and experiences of the children.

Modern and Ancient Languages Language furnishes one of the fundamental means by which a nation may be studied; it shows in itself the thought-action of a people. Modern and ancient languages will have an important place in the Chicago Institute. "A modern language," says Richter, "is the mirror in which you see your own language." When the time comes for a child to learn a foreign language, he will learn it by speaking and reading it, just as he learns English. Speaking and reading will not cease at the end of a year or two; it will be carried through all the grades. The reading should be derived from a study of all subjects. The meaningless jumble of words used in teaching language is to be set aside, and there is to come a real living use of the language that will make the child love the literature of a foreign nation.

Latin is the inner explanation of great people who lived long ago, and we can largely understand them through their language, unless the obstructions of grammar and definitions stand in the way. Grammar and definitions are necessary, but they come into the warp and woof of the work, instead of standing out by themselves. At the right time children can read Cæsar with avidity and intense pleasure. If they have back of them the geography and images of Helvetia and Gaul, with a good knowledge of Roman history, then with the advent of Cæsar they will love to study his words.

The same is true of Homer. The child studies Greek myth and Greek geography and history. At the proper time he ought to hail with delight the immortal epic.

Books and Appliances for Study A carefully selected library of sixteen thousand volumes testifies to the esteem in which books are held in the Chicago Institute. Text-books that open up subjects of study and guide investigation, that contain descriptions of nature and man, and that hold the treasures of literature and art, will be freely used. Those whose pages must be memorized for recitation will have but little place. Laboratories in biology, physics, chemistry, geography, and domestic science are being equipped with the most modern appliances to facilitate the individual investigations of pupils and teachers. The parks, the city, and the surrounding country will furnish a boundless supply of material for study, and an endless variety of questions to be answered.

Co-education The boys and the girls will be educated together. The advocates of the system which separates the sexes during this period of life have nothing to show in results, either in school life or in the society of later life, that warrants the position they assume. On the contrary, the Chicago Institute maintains that the natural and constant association of boys and girls in interesting, healthful work and play is necessary to lay deep the foundations of mutual respect.

Tests and Results On the part of the teacher every recitation will be an examination, and all the work of the pupils and students, estimated in terms of character, will measure their progress and determine their standing.

On the part of the parents these questions should be considered : Do the children grow better in home life and home work ? Are they more helpful, more forbearing, more sympathetic, more reasonable, more intelligent ? Have they better taste and a greater feeling of responsibility ? If these questions can be answered in the affirmative, then the work of the school may be adjudged successful ; otherwise it is a failure.

The school always will be open to parents, and the teachers will stand ready to consult with them regarding the pupils, with a view to a better mutual understanding. It is important for the teacher to get the standpoint of the parents in regard to the children.

Special attention will be given to dull and backward children. It is a well-known fact that dullness and backwardness are usually associated with some physical weakness. Physical training, manual training, music, and art are the natural means by which mental defects may often be effaced.

The new education differs from the old in aim, methods, and means. There must be indeed the new teacher for the new education. The trade of teaching rarely fits one for the art. The profession of teaching is the art of all arts, and the teacher must be pre-eminently an artist.

This presentation of the aim and plan of the new school is not the mere statement of a theory, but represents possibilities that have been demonstrated by its teachers in the past.* It is sometimes supposed, however, that as the attempt is made in school work to be more philosophical, the results become less practical in their relations to the affairs of everyday life. This is a mistaken idea. The distinct purpose of the Chicago Institute is to train and equip its pupils so that all the usual demands made upon them as individuals and as members of the social body may be met in the most effective and, hence, the most practical way. It offers no inducement to any who would seek to realize the high ideals of life by any means except through hard and persistent effort.

The Course of Study

It is the purpose of "The Course of Study" to present in theory and practice a full exposition of the work of the Chicago Institute in the Academic and Pedagogic schools. This exposition will be continuous, and will consist of a monthly record of the work done in all grades and departments, prepared by the teachers of the grades and departments.

"The Course of Study" will be at once the curriculum, guide, and text-book of the students in the Pedagogical School, and a means of preparation for all persons who propose to attend the Chicago Institute. It is also intended to meet the needs of those parents who care to know, month by month, the theory and details of the work of their children in the Academic School. Persons who wish to study the new education will find many practical suggestions as to the application of its fundamental principles to daily schoolroom work.

This number contains the syllabi of the summer school. These syllabi, however, furnish a preliminary study of the work to be done in all departments of the Chicago Institute.

Syllabus of a Course of Lectures upon the Philosophy of Education

Francis W. Parker

"The school is society shaping itself."

"Education is not a preparation for life; it is life.", Dr. John Dewey.

"Put into the school that which you would have the state." German motto.

I.

The purpose of this discussion is to examine existing educational aims and methods, and to establish the following propositions:

1. Education should be the evolution of self-government.

2. Social duties and responsibilities alone develop the habits and character essential to citizenship.

3. The school should be an ideal community, and every pupil should, to the best of his ability, exercise the functions of citizenship.

4. The evolution of citizenship and the growth of the ideal community demand complete physical, mental, and moral activities on the part of each pupil. Community life de-

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*In the Cook County Normal School and the Chicago Normal School.

mands examination into its present conditions, its history and possibilities; it demands that knowledge which is needed to realize those possibilities—that skill which puts knowledge into life—that morality which actively holds the good of others as the supreme motive. Under no other ideal is it possible for a human being to appreciate the necessity of complete living and of earnest study.

5. The ideal of community life is the only ideal adapted to the nature of the child in the kindergarten, and to children and students of all grades, in fact to all human life. It is the ideal that appeals most strongly to young children, and which is in itself capable of expansion as the child develops and civilization advances.

6. The ideal of community life is the one ideal that is intrinsically moral and practically religious.

II. Appeal to Common Sense

An attempt to formulate practically the true and universal opinion in regard to the ideal of human character.

What do we want in our children?

1. Health: Physical, mental, and moral soundness. (a) Body: A vigorous, healthy body; a body fully responsive to the soul; a complete instrument of the will. (b) A body that can ward off or conquer disease.

2. Cheerfulness: Courage to live without complaining, to endure, to overcome, to cultivate a habit of cheerfulness under all circumstances. Habitual cheerfulness implies health, and contributes to the health of body, mind, and soul.

3. Helpfulness: Contributing to the welfare of all. (a) Fundamental: Habitual helpfulness is the intrinsic quality of complete living. (b) Prerequisites: True helpfulness requires knowledge, tact, and skill. (c) Aim: True helpfulness penetrates the real needs of the family, the community, the state.

4. Trustworthiness: The characteristic that makes community life possible. (a) Qualities: Trustworthiness embraces faithfulness, reliability, skill, and work. (b) Cultivation: Trustworthiness is cultivated by responsibility, for home, for society for the state and nation. The highest feeling of which the human being is capable is responsibility for the welfare of all mankind.

5. Good Taste: Love for the true and good and beautiful. (a) Discrimination: Good taste gives the power of discrimination between ugliness and beauty, coarseness and refinement, ignorance and culture, baseness and nobility, vice and virtue, evil and good. (b) Home value: Good taste makes home healthful and comfortable; a place where real art dwells in pictures and literature. (c) Social value: Good taste demands the best sanitary conditions in the community; beautiful architecture, parks, clean streets, and clean back yards. (d) Working value: Good taste is essential in all work. "Art," says Dr. Dewey, "consists in doing anything well."

6. Vocation: That work by which the human being puts into human life the best that is in him. (a) Value: The value of a vocation depends upon the quality of the work done, and is measured by its usefulness to man. The inspiration to high quality is helpfulness. (b) Skill: The desire to be of use to others determines the quality of all skill. (c) Happiness? Usefulness and helpfulness form the basis of true happiness.

7. Citizenship: Character in terms of action. (a) Ideal: The true citizen has one dominant ideal, the highest good of his home, his community, his state, his nation, and through them, of all mankind. (b) Action: The true citizen is one whose best thought and action culminates in the spiritual life of man. (c) Qualifications: Health, cheerfulness, trustworthiness, good taste, a useful vocation, are the essential qualifications for citizenship.

Conclusion: There is a substantial agreement on the part of intelligent persons upon the essentials of character as here given. All parents desire these qualities in their children, and recognize that they are the elements of good character.

Every institution is judged by its achievements. What institutions have for their fundamental purpose the development of character as here portrayed?

Finally: What we need, that we should have.

III. An Examination of Conditions

A criticism of educational ideals.

Why are children sent to school?

Answer: "To get knowledge."

This leads to the consideration of three main propositions.

I. Knowledge-getting is the main purpose of conventional education. This is evidenced by the following prevailing conditions:

a. Requirements for promotion from grade to grade are such and such amounts of knowledge. b. The requirements for entrance to high school, college, or university are specified amounts of knowledge. c. Character is not made a test for promotion. d. Life asks: "What can you do?" The college: "What do you know?" e. Courses of study demand definite amounts of knowledge and skill in a certain time. f. Examinations are regarded as measures of knowledge. g. Parents are fascinated with the quantities of knowledge acquired by their offspring. h. Pedantry has fast hold upon the educational world. i. Knowledge as the end and aim is the controlling ideal in our schools.

II. Knowledge as an end is unscientific and utterly wrong. This is evidenced by the following facts:

1. The field of knowledge is boundless. Knowledge in and of itself, that is, knowledge in the aggregate, affords no criterion whereby a wise selection may be made of what is best for any stage of education.

2. Science is unlimited in its educative possibilities. But scientific knowledge in itself furnishes no guide for a right choice for education.

3. Knowledge of the classics has long been considered necessary for education. (a) It is said that the dead languages have intrinsic value for discipline. It is claimed that although all traces of knowledge of the classics may fade from the mind, still there remains a discipline. Is this an economy of personal energy?

4. The vast majority of pupils do not love knowledge, are not indeed interested, and almost all that is learned in school is forgotten, "mental discipline," it is claimed, remaining. A consideration of the means employed to stimulate study throws much light upon sad results. (a) Formerly, fear drove children to learn their lessons. Now a false aim is set up, rewards, prizes, per cents, diplomas, and degrees. (b) Children are led to gain knowledge by the systematic cultivation of selfishness, the root-vice of mankind. (c) That such means are necessary to stimulate interest discredits the knowledge-aim in education.

5. Text-books are in general specimens of condensed knowledge—so condensed that interest in the text-book is almost unknown.

6. Most so-called methods are short cuts to the acquisition of knowledge, the shortest cut being thought the best. Most new methods are repetitions of methods which appear and reappear like the fashions.

7. Most teachers do not study education as a science and teaching as an art. They have a certain amount of knowledge to impart, accompanied by training in reading and number and the modes of expression. The result is routine and monotony.

8. The science of education and the art of teaching are often considered of minor importance by school superintendents, heads of colleges and universities, and by the public. When a business-like way of acquiring knowledge is found, the problem is for them solved and remains solved.

9. Most discussions and books upon education are apparently aimless; there is a confusion of tongues.

10. The cause of this condition is the ideal of knowledge-getting as the purpose of education. Knowledge-getting limits both method and out-look.

III. The knowledge ideal is the handmaid of despotic government and is an anachronism in an age of self-government. History reveals its origin and causal relations:

1. The first means of keeping the masses in subjection employed through long ages was ignorance. The second, more modern means, is an education which limits the learner to subservience to government, whether aristocracy, hierarchy, monarchy, or partisan supremacy; in other words, the knowledge ideal is the potent means of training subjects. It had its origin in mediæval times, and still holds sway. Proofs of this fact are found throughout all modern history. (a) The history of Prussian education is the record of a prolonged war between the liberty-loving schoolmaster and a tyrannical government. The children of Prussia were kept from nature study for twenty years because contact with nature would lead them to think for themselves. (b) Manual training, or Sloyd, was forbidden in Russia for the same reason. (c) Kaiser Wilhelm said,

"The school ought, first of all, to have opened the duel with democracy." He also said to the heads of the Prussian real schools, "I want you to teach your boys what this government really is."

2. We are trying to educate children into citizenship by means long tried and proved as the best to train subjects.

IV. Subject or Citizen

Mankind has always been divided into two classes—subjects and citizens.

I. Subject: Characterized by subserviency.

1. Without Self-Choice. The subject is typified by the good soldier, one who obeys without question, follows because commanded. His duties and responsibilities are put upon him with little or no self-choice.

2. Without Reason. The subject is a machine to do the will of others. The higher faculties of the intellect are left in abeyance, are not cultivated; he believes without exercising his own reason.

3. Causes of Subserviency. (a) Physical fear, fear of corporal punishment, prison, torture, poverty, discomfort. (b) Spiritual fear of punishment hereafter. (c) Hope of material rewards, home comforts, fame, honor, money. (d) Heredity, ancestral environment, that has, seemingly, crushed out the divine spark of selfhood and fostered a selfishness that has become ingrained by countless generations of practice. (e) Ages of tyranny in which a few have controlled the many for their own selfish ends. (f) Wrong public opinion, a profound and almost universal belief that the vast majority of human beings are not capable of self-choice; that democracy leads to ruin; that despotism alone solves the problems of mankind. The crime of the ages has been a disbelief in the individual. This crime reaches its climax in the disbelief in the divinity of the child.

4. Subserviency Evidenced by History. (a) Every new idea born into the world that has penetrated man's soul with inspiration and faith has come by the way of the cross, the stake, the prison; through torture, scorn, contempt, contumely, and general rejection. This is the summation of proof that man is subservient; that tradition holds human beings in a vise. The struggle for freedom encounters ages of ignorance and bigotry. (b) It is far easier "to conform to this world than to be transformed" by self-activity "into the newness of light." Hence slow progress. "The blood of the martyrs is the seed of the church." (c) The most marked indication of human progress is the lessened time and struggle it takes to put new found truth into life.

5. Subjects Classified. (a) Vassal, serf, minion, slave, are terms well understood. (b) A partisan without reason or knowledge of principles; a follower who believes and obeys without questioning. (c) A man who seeks for fame, money, power, as ends in themselves. (d) A teacher who obeys commands without understanding them. (e) A devotee of fashion.

II. Citizen: Characterized by rational self-choice.

1. Highest Type. The citizen is the noblest type of human being, one whose highest ideal is the good of others in the home, the community, the nation, the world. Hence: (a) He has the courage to accept and stand by what he thinks to be right, and to reject that which is wrong, seeking to find the best for his fellowmen. (b) In the questions of franchise he seeks to choose competent officers, and to make wholesome, necessary laws. (c) He is an earnest, indefatigable student of history and science in order to find that which is best for mankind.

2. Faith. The citizen has an unfailing belief in the infinite possibilities of human growth. Hence: (a) He is controlled by his responsibility for his brother man, and devotes his intellectual powers to the problems of man's salvation. (b) He puts his home, his vocation, and all the best there is in him into the improvement of the race.

3. Franchise. The franchise does not of itself make one a citizen. (a) A voter may be the most abject slave of public opinion, of corrupt rewards, of desire for fame, of a political boss. (b) A non-voter may be an ideal citizen, using her influence and energy for the elevation of man.

4. Citizen and Subject Compared. (a) A subject generally has fixed ideas. A citizen has ideals that cannot be realized in a lifetime.

V. Liberty and Freedom

Liberty and freedom are prime essentials of good citizenship.

I. Liberty: The external conditions for self-choice.

1. Development Unhampered. (a) Perfect liberty means that no obstruction of law, custom, or class distinction stands in the way of the individual's realizing his ideals of right, justice, and progress. (b) The franchise is a condition of liberty.

2. License. There is a vast difference between liberty and license. License is the abuse of liberty; it is generally the personal choice, from motives of selfishness, of that which injures others and degrades one's self.

3. Law. (a) Good human laws are the means of preventing license. (b) Law may hinder the growth of that which should be left to self-choice.

4. History of Liberty. The history of liberty is the story of man. (a) Love of liberty is one of the deepest, most persistent of human instincts. Ages of tyranny cannot crush it ; it has made its way against unrelenting opposition through war, prison, banishment, and death. (b) Political liberty has been and is feared and dreaded by king and tyrant. When the people think, thrones tremble, and therefore the exercise of this divine right has been made a crime. (c) Every great man or woman of the past whom the world loves to remember and reverence was a champion of liberty. (d) Every great reform in human history related to the discovery of truth, whether religious, political, or social, has meant the enlargement of personal liberty.

5. Liberty and Government. (a) Governments have been organized, laws made, armies trained and supported, and even schools conducted chiefly for the perpetuation of fixed forms of government and the suppression of the best in man. (b) A great majority of mankind are rooted and grounded in the belief that the masses should not be trusted with liberty nor permitted to think for themselves.

II. Freedom : Perfect Obedience

Liberty and freedom are popularly used as synonyms. Philosophically, liberty is a condition, a grant to individuals, made by society, community, or nation. Freedom is entirely a personal matter; it is that which every human being may acquire for himself, through his own personal activity and in no other way.

1. How Gained. (a) Freedom is gained by obedience to God's laws. Perfect freedom is perfect obedience. The highest of God's laws is the golden rule. (b) Freedom may be acquired by strong, courageous individuals without the aid of external liberty. Punishment is generally the result of such freedom. (c) The power to acquire freedom depends primarily upon the tribe or the nation, and secondarily upon the individual.

2. An Individual Matter. (a) There are grades and limitations of freedom. Every normal human being possesses a certain amount of freedom. (b) A body in any way responsive to the will exemplifies freedom. Skill in trade, business, artifice, and art—power of expression in any mode—facility in doing anything--may be placed to the score of freedom. Every effort in the right direction in obedience to law, brings freedom. (c) On the other hand, the most prolonged, strenuous, vigorous striving that does not conform to law lames and cripples the being. Working in the law means the support of all natural and divine powers.

3. Freedom and Work. The aim of work determines its quality, and quality has much to do with freedom. (a) The highest, noblest aim stimulates the strongest, most persistent efforts of body, mind, and soul, and therefore brings the greatest freedom. Any aim below the highest limits freedom. The grandest ideal lights its own way to achievement. (b) The power to strive for freedom is the divinest gift of God, the highest glory of man. Man works out his own salvation. He knows the doctrine because he does the will ; he creates because he was created to create. He does righteousness and is righteous. Every bit of freedom must be acquired by personal activity, controlled by the highest ideals and governed by God's laws.

III. Liberty and Freedom Compared

Liberty is an external political condition. Freedom is an internal personal state.

1. Effort Essential. The most favorable external conditions may induce no personal striving for freedom or only faint attempts in that direction. (a) The slaves of the South thought that liberty meant immunity from work with ease and pleasure. (b) .The French people, moulded by ages of oppression, were wild over liberty, but failed to under-

stand that personal freedom must be gained by working and living for the nation. (c) The Germans in the time of the French Revolution were kept from following the French example through love of the Fatherland.

2. Restrictions Necessary. Liberty must sometimes be restricted that personal freedom may develop. (a) A grave problem to-day is whether certain peoples are prepared for liberty. Must they not be educated into liberty? Instance the South American Republics; the Philippines. (b) The liberty of children must be restricted until they gradually acquire the power of right self-choice, i. e., freedom. (c) True education is the acquisition of freedom, it is the development of the right attitude of the mind towards truth.

VI. The Nature and Function of Environment

In popular usage environment and surrounding are synonymous. As biological or educational terms they have different and distinct meanings.

1. Environment is the aggregate of causes, external and internal, which influence and change the individual, and from this aggregate very much of the surroundings is excluded. (a) Surroundings include sky, earth, vegetation, animals, and man; indeed, all the sources of knowledge, past, present and future. Environment in the sense of surroundings would have no value as an educational term. The questions in education are, What is the nature of the being to be educated? What affects and influences the being? (b) Environment acts upon the mind through the medium of the senses. Waves of ether of a certain length and volume create a knowledge of colors. For a person congenitally blind there is no environment of color. The effect of external color upon one color-blind is distinctly limited. Waves of ether within the color boundaries are countless; comparatively few of them affect the highest human organization. The knowledge of color is modified and limited by the individual brain, nerve system, and nerve centers. (c) The same is true of hearing, touch, and the other senses.

2. Environment Relative. (a) The nature of individuals determines the influence of environment. Each human being has his own differentiated environment. (b) The evolution of sentient beings means primarily the growth of physical organization. At each progressive stage of brain evolution the capacity for being affected by external causes becomes greater. Surroundings change to environment. Instance the savage, who has a very limited environment amid surroundings of endless variety, beauty, and grandeur. (c) In the discussion of the value of nature study authorities point to the natural beauties surrounding savages, and ask why with such opportunities Nature does not educate them. The answer is obvious: the limitations of environment are determined by the physical organization.

3. Educational Value. The study of environment has an immense educational value. It furnishes the key to the whole subject of teaching and training. (a) Environment comprehends all the causes of development. (b) The child imitates the language which he hears. Enunciation, pronunciation, idioms, dialect, are all products of imitation. The child's command of language depends upon his power of understanding and using speech. Thus the language environment grows as the child's experience becomes enlarged. (c) The child imitates the acts of others, but his power of imitation is limited by his capabilities. (d) The environment of public opinion has a controlling influence upon the children. The comprehension of public opinion begins with mere feeling and develops with the mental powers.

4. Child Study. (a) Child study within the range of the average teacher's opportunity is limitedto the investigation of the particular environment of each child. (b) Heredity is ancestral environment. (c) The study of that which influences the child comprehends the study of the child itself—in other words, the study of a child's environment means the diagnosis of that child. (d) Such knowledge makes the conclusions of physiological psychology of substantial assistance in teaching. (e) The teacher though unable to avail himself of a thorough laboratory course in psychology may yet use with advantage the results of such investigation by others. Instance: The doctrine of the organic circuit.—John Dewey. Man a moral being.—Munsterberg. Every nerve and nerve center has its functions and capabilities of correlation, its weakness or strength, and its destiny. (f) The results of environment in childhood, good or bad, lead to permanent habits. Instance the little boy taken from a crowded, filthy street, having his

first experience in the country, who begged to go home where he could enjoy the delightful excitement of the patrol wagon every twenty minutes.

5. The Whole Doctrine. To know the needs of pupils and to supply them comprises the whole doctrine of education.

VII. Self-Recognition

The child announces his appearance on earth by a demand to be recognized as a human being, endowed with powers of body, mind, and soul.

1. Self-Recognition Universal. Desire for recognition of self one of the instincts of humanity. Illustrations are countless: (a) In children we note baby's smile, delight in learning to speak, walk, dance. Pleasure in showing off new clothing, dresses, first trousers, boots, cloaks, parasols, etc. Prowess in plays and games. Imitating father and mother in their work. Driving horse, baking cakes, sweeping, etc. (b) Pride in doing anything that meets with approval, whether good or bad, even distasteful things; learning to chew tobacco, to drink liquor, are disgusting performances in themselves, but the desire to be considered "manly" overcomes disgust. The same is true of swearing. (c) Desire to be recognized as somebody common to adults as well as to children. It often becomes more intense as age advances. Orators, actors, and singers are anxious for applause. The author and the artist desire approbation. This anxiety often induces nervous, sensitive, and even morbid states.

2. Self-Recognition and Environment. The instinct of self-recognition is of potent force in the formation of individual character; its effects, whether good or bad, dependent upon environment; environments intended for good which have a negative or debasing influence. (a) A parent with an absorbing love for children may ruin them by an environment not adapted to their needs. (b) A teacher with strong sympathies, an earnest desire to do good, may make a wrong environment.

3. Self-Recognition and Public Opinion. Because of the intensity and universality of the instinct of self-reocgnition, public opinion is the most influential factor of environment.

4. Self-Recognition and the Teacher. The teacher is an organizer of an ideal community, a creator of public opinion, that shall control the school community. Public opinion must spring from the needs of the individual and of the school, must respond to the higher nature of the child, must be stronger than all other influences. (a) If fear be a controlling influence it leads to repulsion, a disgust for study and subjects of study. (b) Love for rewards, per cents, promotion, ungenerous rivalry, defeat all attempts to create a righteous public opinion. Selfishness, the outcome of bribery, disintegrates society. It prevents the subject-matter of study and modes of attention and expression from entering into and influencing character. Compare a 100 per cent in an examination on the life of Abraham Lincoln with the influence of his life upon the school community. (c) The influence of the teacher may be subverted by the influence of one bad boy. (d) Pupils may be made hypocrites in the presence of the teacher, conforming to rules for his approbation. The opinion of the teacher is often the antithesis of the public opinion of the school community. (e) Public opinion should demand only the very best from each pupil. Take as an illustration: A self-willed boy, accustomed to much attention at home, enters the kindergarten. The children are playing and working together in harmony. The teacher invites him to join, but he is not accustomed to joining others —heretofore, everyone has joined him. He demands attention and applause. The little community moves on with no further notice of the stranger. The boy kicks, roars, refuses to join. No one notices him. Here is something entirely new, and as his usual efforts for recognition become exhausted, he joins and tries a new and better way to gain appreciation. (f) Putting responsibility upon pupils a mark of recognition. The bad boy is bad often from the feeling of self-abasement, lack of recognition, with very little to do in school that he likes. Give him some responsibility, and the feeling that he is of value leads him to a respect for public opinion. (g) The duties and responsibilities of citizenship have the strongest influence. "I am responsible for the whole school;" "I must do everything to help and nothing to hinder," should be the dominant feelings. (h) The child is full of activity. He must have much to do—he will do much anyway, right or wrong. He will do what public opinion demands. Create a public opinion which demands the best, and it will

touch the mainsprings of life; he will feel and understand values.

VIII. Doctrine of Interest

I. Ideal: The basis of action.

1. Act and Aim. Every voluntary act has a definite end or goal. This proposition is axiomatic and may be variously stated: End or goal means aim, purpose, achievement, etc. (a) The end may be readily and immediately attained, or it may require greater or less periods of time for its achievement. It may be a life work, or it may transcend even the limits of a lifetime. (b) Ends and aims differ in value. They may be noble or worse than worthless; may be honorable or dishonorable; may be for the welfare or the injury of mankind. (c) The end, or goal, is imaged, conceived in the mind, and held in consciousness as an ideal through successive steps of realization.

2. Function. (a) The ideal determines and limits all that enters into its realization. As the architect is guided in his plan and choice of materials by the ultimate use of an edifice, so the ideal held in consciousness determines the means whereby it is realized. (b) The higher the aim the higher the means required to attain it. (c) It is the law of nature that only that persists which best serves her purpose, and with the individual only that which serves his end becomes personal to him. Only those means are used which meet the demand of his ideal aim. The man whose aim is riches assimilates and utilizes only that which pertains to his particular way of gaining money. (d) Motive is the desire of realization inspired by the ideal which stimulates the impulse, or series of impulses, prerequisite to such realization. (e) Method is the personal way one strives to realize an ideal. Method includes all the peculiar personal ways of working to accomplish a purpose; ways of study, expression, reason. (f) Self-discipline is the training of the will effected by self-activity in the effort to realize an ideal.

3. Interest. Interest is the emotion, the glow of enthusiasm which accompanies effort to attain an ideal. (a) Interest is not synonymous with pleasure. The patriot soldier fighting for his country is not pleased, but is exceedingly interested. (b) Interest is a constant factor of consciousness. Everyone is interested in something all of the time.

II. Application to Education

1. Self-Creative. Education is the self-creation of an ideal accompanied by the self-activity required to realize it. All education should be primarily directed to the creation of the right ideal in each individual soul and to the stimulation of right personal motives.

2. The Child's Ideal. Every child has an ideal of some kind. Ideals may be multifarious. They may undergo constant changes. A settled manner of living tends to the formation of a permanent ideal.

3. Purpose in Work. All work or study on the part of the pupil is under the stress of some purpose, stimulated by some ideal.

4. The One Essential. Knowledge is to the student the fundamental and absolutely indispensable means of realizing his ideal.

5. Exclusion of Extraneous Matter. The rule holds in education as in nature, only that which serves the end persists. Only such knowledge is assimilated as can be utilized in realizing the individual idea. (a) Self-expression, skill, aptitude on the part of the pupil limited to the demands of the ideal. The student acquires only that skill which may be utilized to achieve the end in view. (b) The exercise of reason is in general limited to the choice of knowledge and materials and their adaptation to the realization of an deal.

6. Concentration. Concentration is the bringing to bear of the whole being upon the realization of an ideal; the will, the reason, and all the powers of the mind; knowledge and material, method, study and self-expression.

7. Correlation. (a) Correlation is the direct outcome of concentration. It is the selection of that knowledge best adapted to the realization of an ideal without regard to the classification of knowledge. (b) Correlation is the absolute rule in all the businesses and arts of life, and education should not be an exception. It is the simple, common sense method of choosing and using that which is best adapted to the work to be done.

8. Methods of Teaching. (a) All effective methods are self-creations. (b) No one can use the method of another successfully without an adequate conception of the ideal which was the inspiration of the particular method. Mere imitation of a method of teaching discredits the ideal.

9. What Ideal or Ideals Should Children Have? (a) The ideal to which the whole

being responds. The ideal that is adapted to every individual child and to every stage of human development. (b) The ideal that demands the largest scope and amount of knowledge; the greatest exercise of the will power, of discipline, of reason, of concentration and correlation. (c) The ideal of which mankind is in greatest need. What is the ideal?

IX. The Recitation

Its Function, Method, and Motive.

I. **Function:** (Use in the Educational Scheme.)

1. Aim of teacher and pupil identical. (a) The function of the recitation for both teacher and pupil is to assist to the extent of their abilities every member of the class in educative thought and expression; to efficiently aid every one in the class in the acquisition of knowledge, thought, and power; in the cultivation of the reasoning faculties, and, above all, in enhancing the desire to help others. (b) In other words, the function of the recitation is to utilize the time and the powers of the teacher and each and every pupil, to the best advantage of all; to fully exercise the whole being, mind, body, and soul in the most profitable manner, in the time allotted.

II. Method—Ordered Procedure

The fundamental law of all education should be rigidly observed—that of self-activity. The right method stimulates original personal activity.

1. Attention Essential. Attention to the subject in hand, and to the action of the minds of the teacher and of every pupil, is an absolute requisite. (a) Listen assiduously to every word said, and observe closely everything done. (b) Strive to understand all statements and propositions made. (c) Weigh and judge fairly and honestly the thoughts of each speaker.

2. Genuineness to be Cultivated. (a) Teacher and pupil must lay bare their own minds through a genuine expression of that which they believe to be true, or through an honest and courageous expression of doubts. (b) Never hesitate to reveal your own ignorance of a subject or of a detail. Express clearly your own personal difficulties in striving to discover the truth. (c) Constantly cultivate the art of questioning; ask those questions only which will help a classmate to form better images, and make proper inferences. (d) Each pupil should make his own inferences. Facts, knowledge, to help original judgments, should be freely given. A fact that is not directly used in reasoning, drawing inferences, is useless. (e) Be ready at any moment to give facts and state your own original inferences, and to appreciate the statements of others. Distribute to the class the products of your study and investigation, keeping ever in mind the needs of your classmates as well as your own.

3. Hypocrisy to be Avoided. Hypocrisy, the antithesis of genuineness, is sometimes systematically cultivated in recitations. A strong habit of concealing one's true self is thus formed—a habit to overcome which takes prolonged, vigorous, and persistent efforts of the will. The pupil should be led to avoid the following too common faults: (a) Conforming implicitly to the knowledge, opinions, and belief of the teacher, thus cultivating a shrewdness, a servility in imitation that leaves all originality in abeyance. (b) Holding a high per cent as the chief end of all school efforts. (c) Struggling to get the best of classmates simply in order to stand at the head. (d) Putting the whole mind upon the mere memorizing of words. (e) Talking for the sake of talking, or for the purpose of showing off.

4. Preparation. (a) All study, investigation, and experiment should be for the direct purpose of assisting the whole class in its work, especially in recitation. (b) Laboratory, field, and library work are, in general, personal studies in striving to solve problems by the use of material and apparatus with the least possible assistance. The teacher presents the problems and gives only that aid which stimulates, and economizes self-activity or personal effort. (c) The recitation, however, is essentially laboratory work extended; in recitation the problems are not solved by use of materials, or by the study of books. All the problems of recitation are of *mind*, solved by the close study of the different thought manifestations; by understanding the phase of thought, the varying experiences, the personal efforts, the mistakes and successes of individuals. Every lesson will leave problems unsolved, which impel one to new or renewed experiments, to investigations by observations and to the study of text in order to bring fresh

resources to the class in the succeeding recitation.

III. Motive Stimulating Desire]

The motive in recitation, as in all action, is the desire to realize an ideal. The motive of seeking to assist others in the recitations is the highest possible motive one can have. It leads one to seek for knowledge for the purpose of using it, to find the best method for the purpose of helping others. In a word, to strive to be a citizen of an ideal community. The steady and persistent cultivation of this motive in the recitation contributes to the high culture of the individual.

1. Memory Strengthened. One's whole store of knowledge in relation to the subject in hand is needed constantly in every discussion. Use of knowledge is the fundamental means of strengthening memory.

2. Knowledge Acquired. Each pupil in recitation presents a different side of the same question. In trying to help others he feels the necessity for more knowledge. He also knows instinctively the purpose of the knowledge he wishes to gain. Therefore he seeks for it eagerly. Thus preparation for recitation becomes a necessity.

3. Expression Cultivated. Expression in all its modes is brought into complete exercise. The pupil wishes to make the teacher and the whole class understand thoroughly his thought, for which purpose he uses speech, writing, drawing, etc.

4. Physical Energy Developed. The whole body is the instrument of the mind in attention and expression. Prolonged efforts in attention require the health and vigor of the whole body. No merely physical activity is so absorbing of physical energy as prolonged and close attention. The natural attitude of attention must be steadily maintained. The same can be said of expression. Expression requires the constant exercise of physical activity. The direction of this activity is entirely governed by the motive.

5. Self-Consciousness Overcome. The only possible way to overcome self-consciousness is by the continual exercise of the will in helping others. The mind is absorbed by the question in hand, and the whole being is under control of the will, moving steadily towards its goal. Thus one becomes unconscious of the agents of expression.

X. The Ideal and Motive in Education

Education to-day should be adapted to the conditions of freedom in a free land. It must, therefore, be dominated by an ideal commensurate with the duties, responsibilities, and spiritual promise of the free man.

I. Citizenship: The flowering of human character

1. Ideal. The highest type of free man is the citizen, and the ideal of citizenship—of community life—inspires the motives in education that lead to the highest and best results. (a) Knowledge ceases to be an end and becomes simply the necessary means for realizing the ideal. (b) It necessitates a break with tradition and the discarding of methods adapted to holding people in subjection. (c) It demands, as an essential of right environment, a healthy public opinion which shall appeal to the instinct of self-recognition and make the school a true community, working out the problems of self-government. (d) It vivifies interest and stimulates self-activity in obedience to the law, whereby the individual attains freedom. (e) It demands the giving of one's powers, body, mind, and soul, for the good of others.

2. Motive Altruistic. The motive inspired by the ideal of citizenship is the desire on the part of teacher and pupil to realize immediately that ideal, and the motive is fundamentally and insistently altruistic. The value of the altruistic motive is evident. (a) Acts of selfishness may be admired, but the actors are never loved. Acts of altruism are always met by the love of all mankind, when sufficient time has elapsed for them to be understood and appreciated. By this standard think of the common opinion of Alexander, Cæsar, Napoleon, Washington, Lincoln, Florence Nightingale, Comenius, Pestalozzi, and Froebel. The deepest and profoundest intuitions of man turn unerringly to the altruistic motive. (b) The final judgment of all human organizations, church, state, and society, is derived from what an institution has put into this world

as an active and eternal good. Such final judgments do not depend upon creed, or forms of government, or constitutions, but upon spiritual results. (c) In all our personal friendships, our final judgment of friends depends upon our belief in their motives in life. Just so far as the motive is for the good of man does the memory of a friend remain with us as a sweet incense. (d) There never was in the history of the world a bit of immortal art, literature, music, poetry, painting, or sculpture, created under the desire for fame or wealth. It is granted that many love truth, in both art and science, for truth's sake, and thus produce very important results, but the highest results come from the inspiration that the work done will be of use to man. (e) That this work, whatever it may be, is going into the eternity of human life, is the highest incentive to human action. Through living from the altruistic motive, man feels his greatest dignity.

II. Practical Application to Teaching

1. The Teacher. The educational ideal of citizenship and the resultant altruistic motive make large demands upon the teacher. He becomes a vital social force. He ceases to be a task-master and becomes a prophet revealing the way of life. (a) The teacher is responsible for the spiritual welfare of each pupil under his charge, and for every child in the never-ending series. The teacher is responsible in a marked degree for society. The school of to-day is the society of to-morrow. (b) An appreciation of this responsibility is the strongest possible incentive to incessant study, acquisition of skill, knowledge of the child and his needs. (c) A profound and growing love for humanity; a faith in infinite possibilities of improvement; a belief in an inexhaustible supply for man's needs, and a recognition of eternal loving laws, lift the teacher's art to the highest place in human economy.

2. Preparation. An appreciation of the tremendous responsibility of a teacher leads to a prolonged and intelligent struggle in preparation. (a) The common aim: The shortest cut into the school-room through a diploma or examination. (b) The common purpose: Earning money. (c) The common result: Poor teaching by an artisan teacher.

3. Teaching a Profession. The profession of teaching requires more preparation, moral, intellectual, and professional, than any other. (a) Education is the science of all sciences; teaching is the art of all arts. (b) Appreciation of the greatness of the art leads a candidate to make every effort, financial and otherwise, to acquire the art. (c) One who has any appreciation of the art, or of the responsibility of teaching, shrinks from entering a school as a teacher.

4. The Teacher a Reformer. The teacher must have the singleness of purpose and the courage of a reformer. (a) The necessity for courage is greatly increased by the exceedingly low state of public opinion in regard to education. It is also increased by the extreme difficulty in overcoming prevailing defective methods; in convincing superintendents and principals that better methods and means should be used. (b) The only way to introduce better means and methods is to demonstrate practically their use and superiority. (c) Such reforms require great and persistent courage, tact, patience, and self-control, all of which are not possible without a dominating love for humanity.

5. Love, the Key. Love for children leads teachers to a close study of individuals, to an appreciation of the good in them, and to an understanding of their evil tendencies. (a) There is a false love for children, a superficial sympathy, a pleasure in tricks and manners, a desire to be loved by them which leads to petting and the over-development of precocious instincts. (b) A true love for children is the one incentive which impels the teacher to study their natures, to try to understand them, to differentiate one character from another, to comprehend personal needs. (c) Love begets patience. Changes in character come about with great slowness. Changes in character mean changes in brain structure, changes in muscles, nerves, indeed in the whole being. A chronic difficulty, physical, moral, or mental, yields only to constant and well-directed application of the right means to the end. Love alone can find the way. (d) Love develops the highest courage, courage to stand between the child and all evil influences, such as badly arranged courses of study, public opinion, unjust demands of parents, ignorant supervision, or the immoral fear of punishment. No one can understand the child's educational needs so well as the teacher.

(To be continued in our October number.)

XI. Relation of Knowledge to the Evolution of Character

1. The educational functions of the mode of attention, observation, hearing-language, and reading. As mere processes the modes of attention have no intrinsic value. Reading, for instance, may be intellectual dissipation, may be immoral; or on the other hand, it may lead to moral and mental growth.

2. The value of mathematics in education depends fundamentally on the knowledge acquired by measuring. As a mere mental process mathematics is at its lowest value.

3. The modes of expression may be moral in their influence upon others, mental in the reaction of expression upon thought, and serve as the reinforcement of the modes of attention. (a) Neither modes of expression nor modes of attention have in themselves any intrinsic moral or mental value. Their value consist entirely in knowledge getting and giving, and in the consequent development.

4. The value of knowledge consists in its use for the good of man. Self-expression is the use of knowledge. There can be no act of the will without a knowledge basis. Nothing can be done without a basis of knowledge. Development of civilization means the expansion and concentration of knowledge in life. What blood and breath are to the body, that, in a larger sense, knowledge is to the mind.

5. Knowledge should always be mind nutrition. (a) Self-expression makes knowledge nutritious. Through self-expression knowledge is assimilated and correlated, and becomes memory, power, mental and moral life. (b) Correlation is focused in expression. (c) Teaching adapts to the pupils' mind that knowledge which they need to use immediately. Present good is everlasting good. (d) The selection of knowledge to be taught depends entirely upon the needs of pupils, and pupils need only what they use. The use depends upon the demands of their community life. (e) The feeling and understanding of the immediate uses of knowledge on the part of the pupil are the strongest stimuli and incentives for study.

6. The one central subject of study is creation, its history and its future—creation of nature and of man. (a) Creation is ever going on all around us and in us. Everything is changing. Change is controlled by immutable laws. There is no effect without a cause. The study of causes is the study of law, and the study of law is the study of creation. Thus all genuine study is practically religious. (b) Knowledge (truth already found) is boundless. Truth yet to be discovered is infinite. There is, therefore, only one guide in the preparation of a course of study; knowledge adapted to the understanding of the learner, knowledge that is nutritious, that is needed for immediate use.

7. The effect of nature study upon character. (a) From nature man takes his food, clothing, and shelter. (b) Through investigation, experiment, and consequent discovery, geology, physiography, mineralogy, astronomy, meteorology, botany, zoölogy, and the long list of sciences have been found by man for man's use and education. In a half century most, if not all, sciences have undergone radical change. Changes have been made that amount to revolutions. Subjects that a short time ago were obscure and vague, are now rich with facts and replete with interest. (c) Knowledge of nature supplies man's material needs and enables him to help his brother man. (d) The study of nature gives rise to emotions of wonder, beauty, grandeur, and sublimity. It is the study of the creator through his creation, and therefore induces reverence, love, and worship.

8. Man's influence upon character is more direct, immediate and marked.—(a) The strongest tendency of man is to imitate those around him. The child imitates his mother and other members of the family. Later, public opinion exercises the most powerful influence. (b) The child acquires speech, customs, habits, religious beliefs, party tendencies from his immediate environment. (c) The function of history is to enlarge and strengthen public opinion. History should be taught to arouse noble feelings in the soul, to present the grandest examples of manhood. Nature suggests thought, arouses a desire to investigate, to discover laws. The study of nature leads to originality, independence of thought, and doubt concerning fixed ideas. (d) In broad terms, man is the demand, and the universe of God the supply.

9. Man and nature a unity. (a) Neither can be properly studied alone. (b) Each has functions in education, and both are needed for all-sided education.

10. Richness and fullness of knowledge. (a) There is an abundance, rich, full,

and overflowing. How is it that long years of school life result in such a dearth of knowledge?

XII.—Relation of Self-Expression to Knowledge and Character

1. Physical Basis of Expression.

Motor Discharge, Organic Circuit.—Dewey.
Dynamo Genesis.—Baldwin.
Man a Reactive Animal.—James.
Physical Basis of Morality.—Münsterberg.

1. Functions of Expression. (a) Physical development. Growth and power of the brain and nerve system. (b) Demand for attention. (c) Concentration of images. Mental development. (d) Moral power.

2. Knowledge becomes mind nutrition by means of expression.

3. The proper exercise of all the modes of expression is the best physical exercise. Physical training has its best outcome in the development of expression.

4. Each mode of expression exercises certain bodily agents. The exercise of all of them develops the whole body.

5. The bodily agents of expression are the product of similar and appropriate exercises throughout countless generations (heredity).

6. Any physical exercise in expression that cripples the body is absolutely wrong.

7. All exercise of expression should be easy and graceful.

2. Mental Functions of Expression.

1. Expression demands the holding of images in consciousness.

2. Holding an image in consciousness is indispensable to the growth of that image. Holding transforms knowledge into nutrition.

3. By expression the memory is cultivated in the best possible way. We remember what we do.

4. Expression is the strongest stimulus to attention or study. (a) With brush, pencil or clay in hand, the observation of the object to be represented is keenest and most prolonged. (b) Reading with the motive of expression. (c) Art expression without a model demands the most careful imaging.

3. Each Mode of Expression has its Special Mental Function.

1. Gesture cultivates grace and power in manifesting thought.

2. Speech in education excites the mind to close and careful thinking.

3. Music cultivates the emotions, exalts the mind and leads to harmony in community life.

4. Making requires very close and careful imaging.

5. Modeling develops images of form.

6. Painting is the very best means of studying color.

7. Drawing requires the most careful analysis of form and color.

8. Writing demands the concentration and expression of thought.

All the modes of expression are naturally correlated, as form and color, making and modeling, speech and writing.

4. Moral Use of Expression.

1. Expression is the self trying to realize some ideal.* The ideal to be realized determines the quality of the expression and the thought.

2. The ideal of community life is the strongest stimulus to the best quality of thought and expression.

3. Community life demands all-sided expression, *i. e.*, expression in all its modes.

Conclusion. Expression is the most practical and most important means of training the body, mind and soul.

*See Doctrine of Interest.

(To be continued in October number.)

Suggestions for a Course of Lessons in Psychology

1. **Study in General.** An Examination of Environment. The general modes of learning subjects are well established.

1. Nature. Natural science furnishes a clear illustration of the proper method of all study. The human being is surrounded by earth, air, and water; clouds and sunshine; plant life is everywhere touching the sense-organs; in fact, everything he afterwards may study in science impinges upon him on all sides. We get little more, without study, than the knowledge of the names and some superficial relations of the great mass of objects with which we come in contact every day. Although we know a great number of objects, to use Dr. James' phrase, "We know little about them." Gaining a genuine and valuable knowledge of any

science requires long, persistent observation, investigation, and experiment. The student must not only come in contact with the objects, but must ask questions of them, about them, in such a way as to obtain a series of facts, out of which arise inferences. The series of inferences thus obtained are the basis of future generalization.

(a) If we study botany, plants are the objects of observation. Every one knows something about vegetation in a general way; the student, however, must examine closely the whole plant, its foliage, limbs, stems, trunks, roots, must discover its form and function and its many relations to organic and inorganic matter. Nothing but persistent efforts will ever bring usable knowledge out of a plant, or any other study. The observation must be continued, persistent, and must ever lead to new and fresh inferences.

2. From Simple to Complex. There is a normal order of observation and experiment. The first observations are necessarily superficial; they touch slightly things that have been merely seen or handled. There must be a long series of experiments and investigations, moving from outside inward, moving from easy observations to apparent inferences, then to the more and more difficult, from the superficial and easy to that which lies deeper.

(a) To try, in the initial steps, to go immediately into the deep questions of botany, would be to learn simply unmeaning generalizations.

(b) The great failure in all study of science is the failure to make thorough the preliminary and elementary studies. It is a common and fatal error for both teachers and pupils to plunge into generalizations that cannot be understood—by the pupils, at least. This course defies the law of self-activity. Subjects must be adapted to mental powers, else there is no such thing as assimilation.

3. Books Secondary. Nothing can be learned *primarily* from books. Books guide and assist in observations; prepare the minds for inferences and generalizations; present generalizations that the students must verify by facts; else they are worthless. All elementary knowledge must be acquired through observation.

4. Interest. No one can really study any subject continuously without acquiring a genuine and deep interest in that subject. For instance, one who really studies botany is ever on the alert when plants are present in woods and fields and conservatories. Everywhere the student of vegetation is constantly learning something new. (a) The love for any subject, really studied, increases at a tremendous ratio. This love is intense interest; is, indeed, the one infallible sign of true study. On the other hand, if one dislikes a subject, it is a sure indication that he has never really studied it. (b) There is a vast difference between mere words and thought; between merely seeing an object and observing it.

II. Study of Psychology. The general method of the study of psychology is the same as the study of all subjects. The student has at command, if he will use them, a series of specimens, constantly present, constantly changing, everlastingly new. Psychology is fundamentally the study of the changes of one's own consciousness, with a due regard to the content or substance of thought.

1. Consciousness. Every human being has what may be called a stream of thought that begins in early babyhood and continues throughout life, broken it may be by sleep. This stream of thought goes under the general term of consciousness. The study of the changes of one's own stream of thought, and that which goes on in the stream of thought; in other words, the investigation of consciousness and that which it contains, is the basis of all psychological study.

2. Method Introspective. The study of psychology must begin then with a long series of careful investigations of one's own consciousness and its changes. The facts acquired in regard to one's own consciousness may be used to infer that which happens in the consciousness of others. (a) The one thing absolutely indispensable in the study of psychology is to separate (in thought) the stream of thought, the images in the stream of thought, from all objects external to consciousness. Up to a certain stage of personal growth, outer objects and inner conscious states seem to all intents and purposes identical. When the outer and inner are differentiated, the student enters into a new and higher stage of development. (b) Psychology is by no means an elementary study. It is doubtful whether many students in secondary schools are ready for the scientific inspection of their

own minds. It can be easily understood how we learn to know an object: by observing it, examining it, comparing it, and analyzing it; for instance, as we should observe, examine, and analyze a tree, a flower. It is easy to believe that this examination is done in one's own mind. We observe the movements around us; we examine them and analyze them; these processes have become a second nature to us, but to tell what is going on in the mind other than the general inference that these acts of observation and analysis take place in consciousness is far deeper and more difficult to comprehend. A student who has not gone through a long course of study, under the most scientific general method, covering geography, science and other kindred subjects, is not well prepared to take the much higher step and examine scientifically the changes in his own mind. There can be no study of psychology of any worth whatever, unless there is a persistent, careful introspection of continuous and continual consciousness. The mind is in action all the time, but to see, hear, touch or taste, and at the same time ascertain how these processes effect consciousness requires the closest and most careful and discriminating study.

3. All Questions Psychological. To the student really studying psychology, every question that arises has a psychological side. We instinctively study the minds of others; we interpret their motives. When we carry this instinctive and spontaneous action further, and endeavor to closely discriminate the thoughts of others, what they are and how acquired, we have learned to study psychology.

(a) A teacher, when he is watching pupils and trying to interpret their mental action, is studying psychology, and every new pupil is a new specimen. One can always know when he is really studying, by one infallible test; he applies his knowledge at every step, applies it in the methods of his own study and in helping others.

(b) The study of psychology means in a high sense the knowledge of one's self. It must be begun with a faith that there are immutable laws of mind-action, laws that may be found, understood and used.

III. Images. It is a very difficult problem, indeed, for the teacher to ascertain just how and in what manner to begin the study of psychology. Like the study of any subject it means the selection of subjects and the examination of them. The lessons here outlined consist of a careful examination of images taken from the stream of thought called consciousness—images that are the products of past mind-action. These investigations do not by any means go deeply into the subject of psychology. They leave in entire abeyance all difficult questions. They propose a series of questions similar to those in the study of natural sciences, from which the student can lay a necessary foundation for closer study. The suggestions here given may be applied and illustrated in a thousand ways. It is best, however, to be somewhat definite in the giving of hints as to the mode of procedure.

1. An Examination of Experience. Last summer most of you had a vacation. Many of you went into the country. You had certainly experience somewhere. Try to recall those experiences. What are they? What have you left in your mind as products of your summer vacation? For myself, I can think of some beautiful lakes, bordered by primeval forests. I can recall, in general, the main features of the road to the station, to the camp where we stopped. I can now image streams, trees, logging camps, and ground burned over by forest fires. I can see the carriage in which we rode, the boat that took us across the lake; in fact, I can recall in sequence a large number of mental pictures. How do these experiences appear to me now? What is it that I have of the lakes, of the trees, of the fish we caught, and of the large ones we lost? I wish to give the main body of these experiences a general name—*images*. I have now the images which make up a series of experiences taken from my summer vacation. Images that I probably gained through my eyes and ears; images of forms and faces of men and women that I saw. I can recall the names of places, the logs, the trees, the plants that I saw. I infer then that I have a series of related images. I did not have these experiences before last summer, and therefore they are to me new images. They were images gained from my stay by the lakes.

I have made this brief description in order to stimulate my students to similar collections. Take your pens in hand and write down the images that you gained last summer, one after another. Did you gain anything else? If you did, can you call them to mind as products? Can you recall anything but images of sight and sound? If you can, what other things came in with your experience? When I ask you to relate these experiences, do they enter into your stream of thought one after another? What image begins the series? What follows? By holding the first image of the series, do not others follow? In what order? Is there any regular order? Is this statement true—all I have left in my mind of my vacation experience is a series of related images?

2. Experiences of Early Childhood. Can you remember the house in which you were born, in which you lived in early life? Have you an image of the land around the house? Of the rooms in the house? Of the faces you saw? How many of these early remembrances are you able to recall? What are these experiences to you? Anything except images? Do you remember the first day you went to school? The appearance of the schoolhouse? Have you an image of your teacher? Your schoolmates? Do you remember reciting your first lesson? If I should ask you to write your life, by naming a series of images from your earliest childhood to the present time, what would remain untold? What part do images play in your stream of thought?

3. Experiences in Reading. You have read a great deal, no doubt. What remains in your mind as product of your reading? (I should like to have you confine your experiences to the reading outside of the schoolroom.) Take some book that you enjoyed very much. What remains in your mind as a product of reading? What images do you recall? Many of you have read "Old Curiosity Shop." What can you recall of the book? Can you image the old shop? The old gentleman? Little Nell? What have you left except images? If the reading caused no images in your mind, what else would you have? Try to recall and relate your experiences in reading several books that you have enjoyed very much. The constant question is, what have you of that book now? What remains in your mind? What images do you recall the most easily? Did you gain these images while reading? What else did you gain while reading? What is reading? Read some good story and then recall the product.

4. Work with Your Hands. What work with your hands have you ever done? What can you cook? Describe, if you can, the process of baking bread. When I ask you to describe this process, what is recalled to your mind? You have the images of flour, of yeast, of dough, of the kneading, of putting the dough into the pan, and the pan into the oven. What else do you recall about bread making? Recall as nearly as possible the principal things that you have made in your life, with this hypothesis in your mind, that, while making, you go through a process of imaging. Have you ever made a dress? Describe how you made it: How are you able to describe it? What is in your mind while you are in the act of describing the making of a dress? Compare the images you have gained by making things, and those you gained by reading. Which are clearer? Do you always image that which you propose to do? Recall one day's experience. Do you ever propose to do anything without first imaging the thing as done, and the process of doing?

5. Images Gained in School Work. (a) Please recall a selection of literature that you have studied. What images of it remain with you? Recall one by one the images as they appear to you while studying the bit of literature. How are the images related? Do you recall anything except images? What images are vivid? Does one image follow another in sequence? You have probably read "Paul Revere's Ride." Will you please recall this poem, and tell me the sequence of images you have? What is the first image? What is the second? etc., etc. What have you left of this poem except the images? You have studied Latin literature. What have you left of Cæsar? Of Virgil? Can you follow, for instance, the series of images of the wars in which Cæsar engaged? The battles, geography, etc.? What have you left of this study that you cannot reproduce in images?

6. Images Gained in History. Will you please give me the most vivid images now remaining from your study of history? Those who have studied the history of Greece, what is the most distinct event of Greek history in your mind? Please recall your experiences in the study of Roman history. You have studied the history of the United States. How many can recall the history of the Revolution in a series of related images? What have you left

of this study except images? Describe the battle of Bunker Hill. What images do you recall? If you cannot recall images of events in history, what have you as a mental result of your study?

7. Geography. Please carefully recall some products of your study of geography. If geography is a description of the earth's surface, what have you now as recollections of this study? What other images have you of the earth's surface, and what have you now as recollections of this study? What other images have you of the earth's surface, gained by the study of geography? How many of you can image words alone from your study of geography? What is the difference between the images of a word and an image of a portion of the earth's surface? for instance, the image of North America, and the image of the word North America? When I write upon the board the name Greece, what does this name recall to you? Describe Greece. What is the use of a map? If you recall nothing but maps, what have you gained from the study of geography? Recall all the landscapes that you have ever seen, and those which you gained in the study of geography.

8. Comparisons between School Life and Life outside of the School. Consider questions very carefully. In which have you gained the greater number of images, in school, or outside of school? Which images are more distinct, those gained in school or those gained outside of school? Which images have closer relations, those in school or those outside of school? Which images do you use more in expression, those gained in school or those gained outside of school? What is the difference between reading and study of text? In which process did you acquire the clearer images? Is it possible for you to sum up all you have ever learned in images? What have you remaining of study except images?

9. General questions. How did you gain these images on your vacation? Every time you see, do you have an image? Every time you hear, do you have an image? Every time you touch, do you have an image?

(To be continued.)

Department of Science

Wilbur S. Jackman Ira B. Meyers Charles W. Carmen

The course in nature study will include two lines of work: first, practical instruction in the subject-matter of science; second, the development, illustration, and discussion of methods of teaching the elements of natural science in elementary and secondary schools.

To this end a small area embracing an interesting and varied landscape near Winnetka has been selected for special observation and study. This has been done with a view to training the student in the methods pursued by the best schools in conducting field-work, and for the purpose of indicating how an area may be interpreted. The students selecting this course will be divided into groups of not more than thirty members each, and, in charge of teachers, will visit the field as often as may be necessary to obtain the proper data and materials for laboratory work.

The presentation of what the area affords will be from the standpoint of the landscape taken as an organism. Under this conception, every part observed will be considered in its qualitative and quantitative relations to the other parts and to the whole. The study will begin with a consideration of the organization and distribution of life as exhibited by the plants and animals, and will include an investigation of the causes that underlie present appearances. Therefore an examination will be made of the character of the soil, the amount and distribution of light and heat, and the circulation of the water.

The materials which the area produces will be treated in accordance with laboratory methods from the point of view of their function in the organization of the landscape.

The work of the plant, for example, is partly physical and partly chemical, and depends upon both the physical and chemical properties of the soil. It also bears similar relations to the sunshine. In a general way the same may be said to be true of the animal forms. Again, the soil acts as both a physical and chemical agent in its relations to the plants and animals. The methods of the several branches of science, biology, physics, chemistry, astronomy, meteorology, mineralogy, etc., will be used, therefore, as they seem to be needed in the proper interpretation of the natural history of the area.

The students will be expected to devote at least two hours per week to this part of the work, which will be arranged for on the afternoon program. For this purpose they will meet Professors Carman, I. B. Meyers, and Bass, according to the groups in which they may be placed. The general character of the work is indicated in the different syllabi that follow in this connection.

In the course on *Pedagogics of Nature Study* it is the purpose to present the philosophy of school-teaching in accordance with the demands of science work. This will be done by means of the lecture and round-table method, one hour each day in the forenoon program. All those who select this work are expected to take at least two hours' laboratory work per week in the afternoon.

The topics selected for discussion are included in the following outline.

Pedagogics of Nature Study

Wilbur S. Jackman

OBSERVATION

Conditions. 1. (a) Physiology—the senses; (b) physical. 2. The function of observation in imaging; 3. Relation of observation to inference; to the imagination; 4. Place and scope in education.

References: *Relation of Arithmetic to Elementary Science, Educational Review*, January, 1893. *Nature Study for the Common Schools*, Jackman (Introduction).

Nature Pictures. 1. Sources; 2. Means by which they are created in the mind; 3. Nature pictures as a basis for the various so-called school studies; 4. The inter-relations of nature pictures in time and space.

References: *Nature Study and Related Subjects*, Jackman, Part I. *Nature Study for the Common Schools*, Jackman (Introduction).

Expression. 1. The function of expression in imaging; 2. The relation of expression to observation; 3. Use and limitations of painting and drawing; 4. Appropriate subject-matter for painting and drawing and its technical treatment.

References: *Representative Expression in Nature Study, Educational Review*, October, 1895. *Nature Study and Related Subjects*, Part I. *Nature Study for the Common Schools*, Jackman (Introduction).

Expression (Continued). 1. Writing, its function and place; 2. Writing, technical treatment; 3. Making, its function and technical treatment; 4. Modeling, its function and technical treatment.

References: *Nature Study and Related Subjects*, Jackman, Part I. *Nature Study for the Common Schools*, Jackman (Introduction).

Measurements. 1. The function of measurement in imaging; 2. The significance of form and proportion; 3. The origin and inter-relation of arithmetical processes; 4. The sources of subject-matter in arithmetic. The use and abuse of symbols.

References: *Relation of Arithmetic to Elementary Science, Educational Review*, January, 1893; *Nature Study and Related Subjects*, Jackman, Part I.

Reading. 1. The function of reading in imaging, its relation to observation; 2. Learning to read, technical treatment; 3. The tests of good reading matter, examples to be selected from the library; 4. Interpretations of nature study and literature.

References: *Nature Study and Related Subjects*, Jackman, Part I. *The Correlation of Science and History*, *Educational Review*, May, 1895.

Study. 1. Modes of study, the purpose of study; 2. Essential conditions for study, the function of the teacher; 3. The use and limitation of books in study; 4. The personal element in study.

The Recitation. 1. The purpose of the recitation; necessary preparation; 2. The mutual relations of the class and the individual in recitation; 3. The function of the teacher in the recitation; 4. General plan of the recitation; common errors.

The Art of Criticism. 1. The basis upon which a school should be judged; 2. The basis upon which a teacher should be judged; 3. The proper modes of testing pupils; 4. Results that may be taken as a trustworthy basis for judgment.

References: *The School Grade a Fiction*, *Educational Review*, May, 1898.

Moral Aspects of Nature Study. 1. What should be expected, from the standpoint of morality, of pupils at the age when they enter the high school? 2. Incidental relations of Nature Study to morality and general culture. 3. Cultivation of the Will. 4. Development of Good Will.

References: *Nature Study and Related Subjects*, Jackman, Part I. *Nature Study for the Common Schools*, Jackman. *Ethics and Evolution*, John Dewey, *The Monist*, April, 1898. *Evolution and Ethics*, Huxley, *Popular Science Monthly*, November and December, 1893.

The Round Table discussions will deal with the methods observed in the practice school, and in the laboratory work of the afternoon. In these discussions the practical aspects of Nature Study will be considered under some of the following heads:

I. Field Work in Nature Study. The landscape as a moving picture. The landscape as an organism. Chapters in its history. Human development related to the landscape.

II. Color and Form in the Landscape. - Significance of color and form. Illustrated by work done by the children in the practice school.

III. The Landscape as a Scene of Activity. Activities of plants and animals; from the isolated seed to the all-related plant. Establishment of its relations with heat, moisture, light, growth of root, stem, and leaf. The plant's time and space relations; flower and seed. External and internal adaptations of the plants. Competition. Mutual support. Activities of animals. Conditions favoring colonization: soil, water, shores, rocks, lowlands, etc. Examples: A tree as a center of colonization. The aspects of water that invite colonization. The atmosphere. Migration and extinction of colonies. Relations between plants and animals. External and internal adaptations of the animal forms.

The Courses in Physics and Chemistry

Charles W. Carmen

The courses in physics and chemistry are intended to meet the needs of those teachers who desire to introduce physical science into the common schools. It will be the aim, during the session of the Summer School, to aid the teacher in getting the information, explanations, and apparatus that he most desires, and that is best adapted to his use.

Have you met difficulties during the past year's experience as a teacher? What are they? Have you wished to perform simple experiments, but were unable to provide the apparatus? Have you thought out any definite line of work? Do you wish such a line of work planned for you? Propounding and answering questions along these lines will be the nature of the work rather than a formal course in physical science. The phenomena of nature are so numerous that it matters little what branch we take up.

Considerable attention will be given to meteorology because it is a subject of unusual interest for nature study in the grades, the high schools, and for the advanced scientist. Many of the observations are, easily made, and the general laws governing the predictions of weather bureaus are readily discovered. Another fruitful source of study is that which traces every change that is observed in the inorganic, organic, and organized world to solar energy. The subject, when properly presented, has never failed to arouse interest, even in the usually dormant mind.

While it will be the aim to keep the class-room and laboratory work in as close touch as possible with the field work in general, it is desirable to make a preparation in the class-room and laboratory in order that the best results may be accomplished in the field, hence the arrangement of the work as given below.

The laboratory work following that done in the field will be the tabulating of results and arranging them in a form for work in mathematics. What have we learned from our laboratory and field work? The results are to be condensed and recorded in the form most useful for future reference.

The subject of physics is largely the subject of measurements. To make measurements of any considerable value preliminary training is necessary. Therefore field work will be preceded by the use of such apparatus as is to be used in the field. It is planned that the first measurements in the field will be of length contemplating area and volume. These are to be followed by mass, temperature, quantity of heat, and magnetism.

The field work will be an application of the laboratory apparatus to field use. It is proposed to make measurements on the plat studied for the determination of its area, topography, angles of variation of different sections, variations of ground and water levels, heights, and circumferences of trees and leaf surfaces.

The study of chemistry is largely a study of the results of construction and destruction of chemical compounds. How are we to destroy and construct, in the laboratory, mineral and soil formations? It is contemplated that minerals and soils will be the first branch of field study.

Guided by the laboratory work, an intelligent collection in the field may be expected on the part of the student.

The following outline will give the student, in a condensed form, the general plan on which it is hoped to conduct the work:

The Course in Physics

I. Leading Principles.

1. A brief statement of the subject-matter.
2. Discussions of the plan of work proposed.
3. Laboratory work as a preparation for field work.
4. Field work.
5. Laboratory work upon data and material gathered in the field.
6. Discussion of the results obtained from field and laboratory.

NOTE.—A prominent part of the course is planned to be the outlining of methods for, and the actual construction of, inexpensive apparatus for grammar grade exercises (experiments).

1. (a) Standard units, reference to same, use of. (b) Restricted use of the term physics; relation of physics to biology, geology, chemistry, astronomy, mathematics; method and aim, theory, experiment, qualitative work; quantitative work; measurements. (c) General subdivision of the subject into the physics of matter, the physics of ether. Molar and molecular physics, including mechanics, sound, heat. Ether physics, including "radiant heat," light, electricity and magnetism.

II. Introduction to Meteorology. (a) The province of meteorology. (b) Brief sketch of the growth of the study. (c) The modern contrasted with the early study of the subject. (d) Meteorological phenomena. (e) Meteorological instruments. (f) Construction and use of meteorological instruments. (g) Meteorological observations. (h) Barometer, barograph, thermometers, thermograph, anemometer, anemograph, hygrometer, rain gauge. (i) History and growth of the signal service. (j) How to make weather maps. (k) How to read weather maps. (l) How to forecast the weather. (m) The study applied to animal and plant life. (n) The value of the study to commerce.

Introduction to Mechanics. (a) Simple machines. (b) Function of machines. (c) Animals as machines. (d) Plants as machines. (e) Observations on and study of such machines as levers, cord and pulley, windmills, water-wheels, cranes, elevators, steam engines. (f) Construction and use of simple mechanisms. (g) Aid to the industries of life.

Introduction to Sound. (a) Mechanisms for producing sound. (b) Hearing. (c) The uses of hearing. (d) Hearing " without ears." (e) Sources of sound. (f) Different kinds of vibrations. (g) Sound that is "noise" only. (h) Musical sounds. (i) Different kinds of sound heard in the field.

Introduction to Heat (Molecular). (a) Nature of heat. (b) How related to matter. (c) Sources of heat. (d) Relation of quantity of heat to temperature. (e) Measurements of temperature. (f) Measurement of quantity of heat. (g) Molecular motion changed to mass motion. (h) Machines for producing heat. (i) Machines for expelling heat (ice machines). (j) Heat the primary form of energy in animal and plant growths. (k) The factor of heat in ventilation. (l) The factor of heat in the life of a universe.

Introduction to "Radiant" Heat and Light. (a) Ether dynamics. (b) The ether. (c) The raidiometer. (d) Sunshine. (e) Measurement of sunshine. (f) Mechanical analysis of sunshine. (g) Heat, light, color. (h) Concentration of sunshine. (i) "Artificial" sunshine. (j) Sunshine and animal life. (k) Sunshine and plant life. (l) Indirect influence of sunshine on life in general.

Introduction to Magnetism. (a) Observations on magnets. (b) Magnetic substances. (c) Magnetometers and compasses. (d) Artificial magnetic regions. (e) Explorations in the field. (f) Magnetic observations in general. (g) Effect of magnetism on life.

Physics that May be Observed During the Daily Pursuits of Life.

III. Books of Reference. Elementary Physical Science: (a) Jackman, W. S.—Nature Study for Grammar Grades. (b) Jackman, W. S.—Field Work and Nature Study. (c) Jackman, W. S.—Nature Study Record. (d) Harrington, C. L.—Physics for Grammar Schools. (e) Woodhull, J. F.—Manual of Home-made Apparatus. (f) Woodhull, J. F.—First Lessons in Light. (g) Mayer, A. M.—Sound. (h) Mayer & Barnard—Light. (i) Barnard, C.—First Steps in Electricity. (j) Hall, E. H.—Elementary Lessons in Physics. (k) Bower, J. W.—Simple Experiments for Scientific Teaching. (l) Boys, C. V.—Soap Bubbles. (m) Perry, J.—Spinning Tops. (n) Bert, P.—Primer of Scientific Knowledge. (o) Hopkins, G. N.—Experimental Science.

For Special Reference. (a) Carman, C. W.—Outline of Course in Physics. (b) Chute, H. N.—Physical Laboratory Manual. (c) Chute, H. N.—Practical Physics. (d) Carhart & Chute—The Elements of Physics. (e) Crew, H.—Elements of Physics. (f) Davis, W. M.—Elementary Meteorology. (g) Daniell, A.—Principles of Physics. (h) Everett J. D.—C. G. S. Units. (i) Hastings & Beach—General Physics. (j) Weather Bureau, U. S—Publications.

The Course in Chemistry

I. Leading Principles.

1. A brief statement of the subject matter. (a) The general method of treatment in text-books; the method of using text-books for reference; laboratory and field chemistry versus text-book chemistry. (b) Restricted use of the term chemistry; relation of the subject to biology, geology, physics, astronomy, mathematics, theory, experiment, qualitative and quantitative work. (c) General subdivision of the subject into inorganic and organic chemistry. The study of homogeneous compounds—metallic, non-metallic; world-building before the advent of life. The study of organic and organized matter; world-building after the advent of life.

2. Discussions of the plan of work proposed.

3. Laboratory work as a preparation for field work.

4. Field work.

5. Laboratory work upon data and material gathered in the field.

6. Discussion of the results obtained from field and laboratory.

II. Subject Matter.

Introduction to the Study of Mineralogical Chemistry. 1. Chemical characteristics: (a)

Taste; astringent, sweetish astringent, saline, alkaline, cooling, bitter, sour. (b) Odor: alliaceous, sulphurous, fetid, argillaceous. (c) Solubility; water, acids, alkalies. (d) Fusibility; scales of. (e) Volatility; volatile, partially volatile, non-volatile.

2. Laboratory processes.
3. Field study and collections.
4. Laboratory study of collections.
5. Tabulating and condensing results for future reference.

Introduction to the Study of Soil Formations. 1. Mechanical separations: (a). Mineral. (b) Organic.

2. Physical and chemical separations: (a) Fluid, solid. (b) Separation of fluids into chemical constituents. (c) Separation of solids into chemical constituents.

3. A study of the properties of the chemical constituents.

Introduction to the Study of Animal and Vegetable Formations. 1. Physical and chemical separations: (a) Fluid, solid. (b) Separation of fluid parts into chemical constituents. (c) Separation of solid parts into chemical constituents.

2. A study of the properties of the chemical constituents.

III. **Books of Reference.** *Elementary Chemical Science*, Jackman, W. S. *Nature Study for Grammar Schools*, Jackman, W. S. *Field Work and Nature Study*, Jackman, W. S. *Nature Study Record*, Bower, J. W. *Simple Experiments for Science Teaching*, Roscoe—*Chemistry*, (Science Primer Series.) Collins, J. H. *A First Book on Mineralogy*, Faraday, M. *The Chemical History of a Candle*, Appleton, J. H. *Chemistry*, Memsen, I. *An Introduction to Study of Chemistry*, Remsen, I. *A Laboratory Manual*, Remsen, I. *Organic Chemistry*, Orndorff, W. R. *Laboratory Manual, Organic Chemistry*, Coit, J. M. *Chemical Arithmetic*, Cross, G. M. *Chemical Technics*, Williams, R. P. *Elements of Chemistry*, Williams, R. P. *Laboratory Manual*, Shepard, J. H. *Elements of Chemistry*, Wiley, H. W. *Principle and Practice of Agricultural Chemistry*, Church, A. H. *The Laboratory Guide.*

Study of Animal Life

Ira B. Meyers

The work in zoölogy will be confined largely to a study of œcological relations as determined by Chicago environs, and illustrated by the field about Winnetka.

The various features of a landscape—facing, altitude, soil, moisture, temperature, and vegetation—are factors in the problem of adaptation to the animal life of the area. It is the aim of the field work to observe conditions under which animal life exists in any given area, and to note the influence of constant and varying factors upon its habits, characteristics, and life history.

The museum and laboratory work aims to aid the œcological studies of the field by (a) closer and more detailed observation of minute forms and structures; (b) study of internal structures; (c) continued observation of living forms through aquarium and cage; (d) comparing homologous structures and functions of allied forms.

Physiographic features: Lake, sand and pebble shore; shore bluff; prairie; swamp.

Botanical features. (See Botany Outline.)

Zoölogical groups: Insects; crustaceans; batrachians; reptiles; birds; mammals.

General observations: Forms found in each special physiographic feature: (a) Dominant forms. (b) Occasional forms.

Range: Forms unrestricted in extent of range. Forms restricted to a particular part of the area. Forms attracted by some physiographic feature of the area—permanent residents. Forms attracted by seasonal food—temporary residents.

Movement: Demands for movement; range; factors influencing movement. Modifications of organs of locomotion: (a) As affected by the different media. (b) As affected by some peculiar aspect of the same medium. (c) As modified by peculiarity of habit.

Laboratory: A study of organs of locomotion.

Museum: Comparison of organs of locomotion. Field or zoölogical study of locomotion of living forms.

Food: Condition of food: Liquid or solid. Character of food: Vegetable, animal, mixed. Vegetable food: Method of locating food. (a) Kind of plant. (b) Part of plant. (c) Effect of injury upon plant. Plant's attempt to resist injury. Length of time food part is available; relation to life of animal. Animal food: Methods of locating food; methods of securing food.

STRUGGLE FOR EXISTENCE.
Botanical Field at Winnetka.

Laboratory: Study of sense organs.

Museum: Comparison of organs of prehension and mastication.

Field and Zoölogical Gardens — Animal feeding.

Protection: 1a. Adaptations enabling individual groups to maintain their position among the varied forms. (a) . Forms adapted to area inaccessible to other forms. (b) Specially constructed homes or shields. (c) Special organs of protection. (d) Nauseous secretions. (e) Cunning or swiftness. (f) Color protection. (g) Without visible means of protection. 1b. Adaptations enabling groups to resist seasonal changes, such as temperature and moisture.

Laboratory and Museum: Study of protective organs and animal coverings.

Field Zoölogy: Study of life habits as related to means of protection.

Homes; home life of animals. (a) Living: Isolated, in pairs, in colonies. (b) Influences determining mode of living. (c) Living in specially constructed homes. (d) Dependent upon accidental shelter—crevices, holes, deserted homes, etc. (e) Changing growing vegetation into homes; insect galls. (f) Methods of caring for young. (g) Songs, call notes, etc.; purpose, methods of producing.

Animal life as related to man: Noxious and economic forms.

References: *Origin of Species*, Darwin. *Island Life*, Wallace. *Insect Life*, Comstock. *Animal Life*, Thompson. *Nature Study in Common School*, Jackman.

Botanical Field in the Winnetka-Glencoe Area

I. Study of the characteristic plant societies of the region as they are related to topographic features of the region.

Crest of bluffs: Characteristic trees, shrubs, and herbs. Undrained depressions on bluffs. Characteristic trees, shrubs, and herbs. Slopes of ravines. River bottom. Stream bed.

Lake cliff: (a) Old cliff with an established vegetation. (b) Young cliff.

Present beach: (a) Lower beach. (b) Middle beach. (c) Upper beach.

Old beach ridges. (Ancient shore lines of Lake Chicago.) Depression between beach ridges. Swamp to westward.

Questions: Why such differences in flora? Are the conditions of the given area favorable for plants? What are the controlling factors in each case? How explain striking similarity between the Lake cliff flora and that of the sand dunes at Dune Park? Why is the cedar, pine, juniper combination characteristic of the Lake cliff area and not of other regions? Significance of present distribution of the sugar maple? the button bush? the shepherdia? the hop hornbeam? the wire grass? the bluegrass? the mosses? etc.

II. Conditions Which Have Had Influence in Determining the Different Plant Societies at Winnetka.

1. Soil Conditions. Chemical nature of soil. Physical nature of the soil. Stability. Porosity. Capacity for obtaining water. Capillarity. Deliquescence. Capacity for retaining water. Amount of soil-water available for plant uses. Tenacity. Injury done by cracking of clay soil. Ease or difficulty with which roots enter soil. Differential weathering of bowlders in the soil. Acid excretions from roots of plants.

Questions, such as: What are the soil conditions most favorable for plants? What plant adaptations can be traced to soil conditions?

2. Atmospheric Conditions. Chemical nature of the atmosphere. Physical nature of the atmosphere. Water of the atmosphere. Movements of the atmosphere.

Questions: What constituents of the atmosphere are used by plants? How are these obtained? What influence does the amount of moisture in atmosphere have upon transpiration? Influence of air movements. What plant adaptations can be traced to atmospheric conditions?

3. Heat Conditions. Average temperature during growing season. Extremes of temperature in air and soil.

4. Light Conditions. Total amount of light received in various situations. Direction of light.

Questions: What differences in the plant societies may be due to differences in heat and light conditions? Significance of the distribution of the delicate mosses? Vernal habits of forest herbs? Account for layers in the vegetation of the forest. What difference in structure between plants grown in shade and those grown in direct sunlight?

III. History of the Different Plant Societies of Winnetka as it is Related to the History of the Topographic Features.

1. The original flora of each topographic feature.

2. The topographic changes which have brought about the present flora.

3. Changes going on at present which will influence the flora found at Winnetka. (a) Change from steep to gradual slopes. Increased stability of soil conditions. Accumulation of humus. (b) Widening of ravines. Increased exposure to heat, light, and wind. (c) Deepening of ravines. Lowering of underground water level in slopes. (d) Formation of wider flood planes, deltas, etc. (e) Filling in of swamps and undrained depressions.

4. The probable future of the flora associated with each topographic feature of the region.

Department of History and Literature

Emily J. Rice

The purpose of the courses in history and literature is to give special training in the selection of subject-matter suitable for use in elementary and secondary schools and the philosophy of methods of teaching these subjects. With this end in view, opportunities are offered for the study of historic material and for independent research and investigation of principles on which the teaching of history and literature is based.

The courses in this department are closely related to those in geography, art, dramatic expression, economics, and social science. The geographical laboratory is supplied with physiographic maps which will aid students in the interpretation of political and social data. Particular attention will be given to local history, and excursions in the city and vicinity will be made the basis for a study of economic and social conditions.

The department is supplied with a good collection of pictures, tools, and implements of primitive people, and with illustrations of the development of the industrial arts. The course includes a study of typical stories of different nations and periods of history; principles of presentation of these stories to children; relation of literature to history and art; observation of model lessons; and the writing of stories.

Ancient civilizations will be studied in connection with the growth of the industrial arts, architecture, painting and sculpture, social life and government. The relation of geography to history and of occupations to social life and government will be brought out. The art and literature of each people will be studied as sources of knowledge, and the development of art will be an important feature of the work.

The growth of mediæval and modern civilization will be considered, including the history of the United States. The development of social and political institutions will be traced and a special study made of colonial industries.

I. **Methods of Historical Study.** Relation of history to present social conditions. Adaptation of subject-matter to stages of individual experience. Analysis of periods of history. Outline of course of study. Analysis of methods of study. Sources of history. Relation of geography, literature, art, and sociology to history. Special value of particular periods of history in a course of study.

References: *Studies in Historical Method*, Mary Sheldon Barnes. *Methods in History*, Macy. *Methods of Teaching History*, Hinsdale. *Methods of Teaching History*, Ed. by Stanley Hall. *Talks on Pedagogics*, Parker. *School and Society*, Dewey. *Course of Study in History and Literature*, Rice.

II. **Ancient Civilizations**—Egypt. Geographical conditions governing the development of primitive people. Nest-places of history. Egypt as type. Relation of structure and climate to development of people. Influence of building material of country upon its architecture. Principles of construction illustrated by the Great Pyramid. Early sculpture and painting in Egypt; its industrial arts. Plan of an Egyptian temple. Religious ideas as expressed in temples and tombs. Advancement of architecture, sculpture, and painting. Literary remains.

References: *History of Art in Ancient Egypt*, Perrot and Chipiez. *Egyptian Archæology*, Maspero. *A Thousand Miles up the Nile*, Amelia Edwards. *Pharaohs and Fellahs*, Amelia Edwards. *Conscience and Religion in Egyptian Art*, Petrie.

Greece—the Homeric Age.—The Iliad and Odyssey as sources of our knowledge of early Greek history. Relation of Mycenæan art to the Homeric poems. Agamemnon's palace. Industrial arts of the Mycenæan age. Social life in the time of Homer. Mythology. Place of the Iliad and Odyssey in the history of literature.

References: *The Mycenæan Age*, Menatt. *Cult of Greek States*, Farnell (mythology). *The Golden Bough*, Frazer. *Schliemann's Troy*, Burckhardt. *Gods of Greece*, Louis Dyer.

General view of Greece: Scenery, structure, climate, and productions. Effects of Greek geography upon its people in character, industries, and institutions. Special study of Laconia and Attica. What Greece stands for in history and on what basis its history should be studied.

Oriental ideas of government, Egypt as type. Government of the Homeric age. The Spartan theory of government. Spartan education. The Athenian government. Athenian education. The conflict with Persia and what it meant to history.

The Ionic type of Archaic sculpture. The Doric type. Early Greek painting. Greek vases. Effects of Persian wars. Persian ideas of life compared with Greek ideas. Architecture of the great age of Greece; the Parthenon; the Propylæa; the Erechtheum. Characteristics of the people shown by their building. The sculpture of the Parthenon. Other Athenian sculpture. Olympia and its contests. Delphi and Eleusis. Characteristics of the age of Pericles. Contrasts with our own age and lessons for it.

The Alcestis of Euripides. Origin of the drama. The Greek theatre. Later Greek sculpture. Causes of decline of art. Roman architecture. Pompeii.

References: *Greek History*, Busolt. *Handbook of Greek Sculpture*, Ernest Gardner. *The Art of Phidias*, Waldstein. Frazer's *Pausanias*. *Mythology and Monuments of Ancient Athens*, Harrison and Verrall. Von Rohden's article on Greek vases in Baumeister's *Denkmäler*. *The Greek Theatre*, Moulton. *History of Greek Sculpture*, Murray. *History of Greek Sculpture*, Lucy Mitchell.

Excursions in Greece, Diehl. *History of Greece,* Grote. *History of Greece,* Curtius. *Greek Education,* Davidson. *History of Greek Art,* Tarbell. *Pompeii,* August Mau.

III. **The Renaissance.** Characteristics of period and value of study. Causes of another great period of art and literature. Feudalism and its influence on later times. Industrial conditions of feudal ages. Early Christian and Byzantine art.

Italy in the fourteenth century. Buildings of Florence. Sculpture and painting of Florence in the fourteenth century; the fifteenth century. Influence of Greek art. Relation of art and political history.

Causes of the power of Venice. Architecture of the city. Venetian painters of the fourteenth and fifteenth centuries. Causes of the decline of Venice.

The great names in the art of the sixteenth century. Influence of these artists upon later times. Causes of decline of art. Changes in industrial conditions. Influence of Italy upon France and England. The middle ages in a course of study. Connection with English and American history. The discovery of America.

References: *The Renaissance in Italy,* Symonds. *Handbook of Painting,* Kugler. *Italian Painters,* Morelli. Berenson's *Florentine Painters of the Renaissance, Venetian Painters of the Renaissance, Central Italian Painters of the Renaissance* and *Lorenzo Lotto, Michael Angelo,* Symonds. *Vasari,* Ed. by Hopkins and Blashfield. *Makers of Florence,* Mrs. Oliphant. *History of Mediæval Art,* Goodyear. *Discovery of America,* Fiske. *History of America,* Payne.

IV. History in Elementary Schools. Relation of historic industries and the handwork of children. The building instinct of children. Place of the study of historical architecture, sculpture, and painting. Modeling and painting in school. Value of tracing growth in art. Literature and art as a basis for the study of history. Study of pottery in school. Adaptation of history for children. Dramatization of stories for children. Value of the Iliad and Odyssey. Adaptation of periods of history to different grades. Special value of Greek history. Place of Roman history in course of study; of the Renaissance.

Methods in constructive work connected with history. Sociology in course of study. Observation of social environment. Methods of obtaining data in regard to present social conditions. Relation to study of local history. The field excursion in history.

V. Development of the Industrial Arts. Necessities of primitive labor: Food, clothing, shelter. Development of inventions. Tools and implements of savage and barbaric life. Houses and home life. Spinning, weaving, and sewing. Early language and writing. Mythology. The geographical conditions of America which influenced its aborigines. Life of savage tribes of America; their industrial arts. Life of lower barbarians. Location of tribes in country. Influence of environment. Primitive religious ideas. Folk-lore. Regions of America best adapted to develop primitive inhabitants. The country of the Aztecs. Industries developed. Comparisons with other tribes. Industrial arts, social life, government, and religion. The country of the Incas; their industries, social life, government, and religion.

References: *Primitive Culture,* Tylor. *Houses and Home Life,* Morgan. *Man Before Metals,* Joly. *Origins of Invention,* Mason. *Woman's Share in Primitive Culture,* Mason. *Discovery of America,* Fiske, Vol. I. *History of America,* Payne. *The Aztecs,* Biart. *Some First Steps in Human Progress,* Starr.

VI. Relation of Industries to Social Life and Government. Local history. Value of study of immediate environment. Appearance of locality before its settlement. Chicago as type. Story of Marquette and Joliet. Story of La Salle. The settlement at Starved Rock.

Beginnings of English occupation. Fort Dearborn. Industries of early Chicago. Settlement of region around the city. Growth of village. Excursions to historic sites and museums. City life compared with village life.

References: *La Salle and the Great West,* Parkman. *The Fergus Papers — Waubun,* Mrs. Kinzie. *The Story of Tonty,* Catherwood.

Colonial History. Story of the Pilgrim settlement. Appearance of country. Occupations developed. Relation of these to geography of country. Methods of work. Village life. Comparison of industrial arts with those of our own time. Growth of colony. Cause of settlement and influence of industrial condition of England upon colonists. Similar study of the Puritan colony.

Appearance of an old Virginia plantation. Character and history of colonists. Geography of country. Occupations of people. Relation of these to geography of country. Industrial arts. Comparisons with New England. Influence of occupations on institutions. Growth of colony.

Kind of country found by French colonists. Character of colonists, and history of settlement. Appearance of a typical colony. Occupations developed. Houses, home life, and industrial arts. Social life and government. Comparisons with New England and Virginia.

The New England town-meeting. Its origin and history. Its influence. Spread of colonies, and beginning of the representative system. The old Virginia county. Colonial legislatures.

Conditions in England which led to settlements in America. Industrial changes in England. Origin and growth of the representative system. Comparisons with Oriental, Greek, and Roman types of government. Effects of English ideas of government upon English colonies.

The government of France in the Old Régime. Causes which led to colonization. Character of colonists. Influence of country upon occupations and institutions. The French in the Mississippi Valley.

Differences between the French and English colonies in extent of territory, population, religion, relation with the Indians, military strength, and government. Causes of conflict between them. The Seven Years War. Relation of geography to conflict. Frontier lines.

References: *English Colonies in America,* Doyle. *English Colonies in America,* Lodge. *Beginnings of New England,* Fiske. *Old Virginia and Her Neighbors,* Fiske. Parkman's works. *Civil Government,* Fiske. *American Political Ideas,* Fiske. *American History Told by Contemporaries,* Hart.

Industrial Development of the Nation. Causes of struggle with England. Literature of the Revolution. The study of wars in history. Geographical basis of study of wars. Meaning of "Critical Period." The Federal Convention.

Early relation to foreign powers. Gradual gaining of independence. The westward movement of people. Routes of travel. Effects of geography. Frontier lines. Influences which have tended to strengthen the Union.

Inventions and their influence. Belated industries and regions. Present industrial condition. Relation of industries to institutions. Relation of institutions to development of literature and art. National problems.

References: *History of the United States,* McMaster. *History of the United States,* Schouler. *History of the United States,* Henry Adams. *The Critical Period,* Fiske. *Rise of the Republic,* Frothingham. *Influence of the Frontier,* in *Herbert Year Book,* 1899.

Geography

Zonia Baber Wallace W. Atwood

The work of this department in the Summer School has been so planned that two great ideas, prominent in modern geographic thought, may be emphasized. One of these ideas deals with the influence of geographic environment upon man; the other with the evolution or continual change of that environment. A full and sympathetic appreciation of our natural surroundings cannot be attained without a knowledge of their history and an understanding of their influence upon the settlement and development of the region.

In the *Study of the Continents and Islands* it is proposed to give a broad, comprehensive view of the great land masses of the earth, picturing the chief physical features of each and showing how these physical features together with the climatic conditions influence the settlement and development of the different geographic provinces of each continent.

Throughout the work of this course, sand and chalk modeling will be illustrated, and their use in the teaching of geography shown. The political and commercial phases of geographic work will also receive due consideration.

The study of *Geographic Processes* will deal with the changes which land forms are continually undergoing. These changes will, so far as possible, be studied in the

THE DUNES AT DUNE PARK, INDIANA.

field, and the indoor work developed from actual observations made by the class.

The region about Chicago offers many unusually good opportunities for field work, and frequent excursions from the city will be made.

At Winnetka and Glencoe, the origin and growth of gullies, and all the processes associated with valley development, may be studied. Along the west shore of Lake Michigan, north of the city, the action of the waves and the resulting shore line forms are illustrated, while bordering the great Chicago flat are the ancient shore lines of "Lake Chicago." At the south end of Lake Michigan, in northern Indiana, dunes have been developed on a magnificent scale; the Pleistocene or glacial drift formation, including terminal and ground moraines, is within easy reach; while the underlying rock formation of the region is well shown along the drainage canal, in the numerous quarries about the city, and at "Stony Island."

It is the aim also in working out with the class the geography and geology of the Chicago region, to make each student familiar with the methods of field work and field teaching, so that afterwards any local field may serve as a basis of instruction.

OUTLINE OF FIELD GEOGRAPHY.

I. Field Studied – Winnetka-Glencoe regions.

Special Topics—Weathering and erosion by running water, including the soil-making processes; the different kinds of soil; the origin and growth of a gully; securing of a permanent stream; work of stream in eroding, transporting, and depositing; valley-forms in youth, maturity, and old age; general topographic effect of valley development; land-forms resulting from stream deposition.

II. Field Studied—Shores of Lake Michigan.

Special Topics—The work of waves, winds, and littoral currents, including origin and nature of waves; erosion by waves; explanation of the lake cliff; depositional forms along the shores, i. e., bars, hooks, spit, etc.; ancient shore lines about Chicago; development of dunes; relation of vegetation to origin and growth of dunes; influence of dunes on vegetation; explanation of the great dune region at south end of Lake Michigan; dune topography, and migration of dunes.

III. Field Studied—Stony Island, Drainage Canal, and Quarries.

Special Topics—The underlying geographical formation, including origin of underlying formations; structure and history of Stony Island, and influence of geological structure on topographic forms.

IV. Field Studied — Purington and Barrington.

Special Topics—Glaciers, glacial work, and glacial formation, including types of glaciers; formation and movement of glaciers; erosion, transportation, and deposition by glaciers; forms of glacial drifts; i. e., terminal moraines, ground moraines, drumlins, eskars, valley trains, outwashed plains, etc.; their recognition and classification.

References: *Geography of Chicago and Its Environs*, Bulletin No. 1, Geographic Society of Chicago, Salisbury & Alden. Gilbert's *Henry Mountains*, Washington, D. C. *The Ecological Relations of the Vegetation of the Sand Dunes of Lake Michigan*, University of Chicago, Dr. Cowles. *An Introduction to Geography*, Scott. *The Drift*, Salisbury, *Journal of Geology*, Vol. II. *Shoreline Topography*, Gulliver. *Geography of the Devil's Lake Region*, Salisbury and Atwood.

Outline of Continental Geography

I. North America.

1. Appearance. (a) Extent. (b) Shape. (c) General topography.

2. Eastern and Western highlands. (a) Great central plain. (b) Special topography.

3. Glaciated regions. (a) Mountainous regions. (b) Plateaus. (c) Plains, coastal; river, flood. (d) River basins. (e) Climate.

4. Wind. (a) Temperature. (b) Moisture. (c) Vegetation.

5. Forests. (a) Prairie. (b) Western plains. (c) Deserts. (d) Animals—wild, domestic.

6. Relation to surface and climate. (a) People. (b) Political divisions.

7. In country. (a) Industries. (b) How promote progress of civilization. (c) Influence of country life on people.

8. In cities. (a) Location—why? (b) Future growth—why? (c) Commercial. (d) Political. (e) Industries. (f) Influence of cities on human progress. (g) Influence of city life on the individual.

9. Educational institutions. (a) Political institutions. (b) Exports, imports, highways.

6. General view of evolution of North America. How introduce a continent? Pupils' use of modes of expression, sand modeling, chalk modeling, drawing, painting, etc. Use of weather maps, crop bulletins.

References: Stanford, *Compendium of North America.* Reclus, *Bird's-Eye View of World.* Reclus, *Earth and Its Inhabitants, North America.* Longman, *School Geography.* Longman, *Physical School Atlas.* Davis, *Physical Geography.* Shaler, *Our Continent.* Farr's *Physiography.* Shaler, *Nature and Man in America. Encyclopedias. U. S. Geological Surveys,* from 4th to 12th, inclusive. Whitney. *United States.*

II. Comparison of North America with South America, Eurasia, Africa, Australia.

1. Size; shape. (a) General plan of continents. (b) Topography, mountains, plains, etc. (c) Simple drainage slopes. (d) Special drainage areas. (e) Climate. (f) Vegetation. (g) People.

2. Distribution in relation to topography. (a) Industries. (b) Highways—natural; made by man. (c) Cities. (d) State of civilization of people—cause. (e) Our relation to other nations.

References: Mill. *International Geography,* Stanford, *Compendiums of Continents, South America, Eurasia.* Reclus, *Earth and Its Inhabitants.* Reclus, *Bird's-Eye View of World.* Mill, *Realm of Nature. Encyclopedias.*

III. Islands of the World.

1. Distribution. 2. Formation. (a) Continental—location. (b) Oceanic.

1. Volcanic—location. 2. Coral—location. 3. Surface. 4. Climate. 5. Products. 6. People. 7. Present interest in islands. Relation to commerce. Division of control of islands among great nations. 8. Special attention to Hawaii, Philippines, West Indies.

References:

Islands—Reclus *New Physical Geography. The Ocean.* Reclus, *Oceanica.* Stanford, *Australasia.* Philippines—Same as above, also Reclus. *Earth and Its Inhabitants. National Geographical Magazine,* '98. Reclus. *Bird's Eye View of the World. Forum, July,* '98. *Current Literature,* October, '98. *North American Review,* September, '98. *Britannica*—See Index.

Hawaii—

Dutton. *Hawaiian Volcanoes.* United States Geological Survey. Fourth Annual Report, 1882-8. Wallace. *Island Life.* Alexander. *Islands of the Pacific.* Dana. *Characteristic Volcanoes.* Mrs. J. S. Bishop, *Hawaiian Archipelago.* Maxwell, *Lavas and Soils of Hawaii.*

Cuba and West Indies—

C. Hill. *Geology of Cuba.* Bulletin Vol. XVI. No. 15 of Museum of Com. Zo. Cambridge. *National Geographical Magazine,* May, '98. Reclus, *North America. The Earth and Its Inhabitants.* Stanford, *Compendium—North America.* Reclus, *Bird's-Eye View of the World. Britannica*—See Index.

IV. Distribution of Sunshine.

1. Change of place and time of sunrise and sunset here—cause. 2. Cause of variation of length of day. 3. Meridianal movement of sun. 4. Relation of change of the angle of sun's rays to the seasons. 5. Effect of change of length of day at different places on earth. A knowledge of mathematical geography an essential in imaging continental landscapes.

References: Jackson, *Astronomical Geography.* Newcomb, *Popular Astronomy.* Huxley, *Physiography.* Gregory, *Elements of Physiography.*

V. Winds and Ocean Currents.

1. Winds of this region. (a) Direction—relation to barometric pressure. (b) Temperature. (c) Velocity. 2. Study of weather maps of U. S. (a) High areas. Low areas of pressure. (b) Isotherms. 3. Terrestrial winds. (a) Trade; counter trade; polar; monsoons. (1) Direction—constant or variable—cause? (2) Temperature. (3) Moisture. (4) Relation of winds to topography. (5) Relation to distribution of life. (6) Relation to man. 4. Ocean currents. (a) Location; movement; temperature; density. Effect on continents. Relation to life distribution—cause?

References: Davis, *Elementary Meteorology.* Davis, *Physical Geography.* Ferrell, *Popular Treatise on the Winds.* Waldo, *Elementary Meteorology.* Geikie, *Physical Geography.* Mills, *Realm of Nature.* Archibald, *The Story of the Atmosphere.* Gregory *Elements of Physiography.*

VI. Distribution of Man. Relation of History to Geography.

1. Effect of structure and climate on man's development. 2. Growth of civilization in hot, temperate and cold countries. 3. Relation of mountains to the early development of man. 4. Relation of protected river valley, of islands, to early civilization. 5. Value of forest regions; of prairie regions to man's development. 6. Regions of earth's surface best adapted to early development of civilization. 7. Present geographical distribution of man according to advancement. 8. Location of white, yellow, and black types. 9. Distribution of tribal governments, of monarchies, of republics. 10. Conditions for the development of a republican form of government.

References: Herbertson, *Man and His Work; an Introduction to Human Geography.*

Syllabi on Applied Mathematics

George W. Myers

It is a matter of common observation and the occasion of no little concern to schoolmen that the brightest mathematical students, when trained exclusively by text-book methods, are powerless to apply their mathematical knowledge to practical affairs. So soon as meaning is attached to symbols many expert mathematicians, indeed, are thrown into hopeless confusion. The foes of mathematical study in the schools have no difficulty, therefore, in finding an abundance of examples to substantiate their contention that mathematics is the most useless of all studies. It is believed that this deplorable condition has been brought about largely by the friends of mathematical study in aiding, by practice if not by precept, in the isolation of mathematics from other subjects of study, thereby divorcing mathematics from its applications and treating it as so much pure logic.

No thoughtful scientist can desire for a moment to discredit the value of the work of the pure mathematician. The history of science shows too well how likely the results of the mathematical logician are to find important application in the realm of useful knowledge, and how great the service to science is which these applications sometimes render. The application of the theory of the conic section to the planetary orbits, after Kepler found these orbits to be conics, will suffice to show how the results of abstract mathematical research has advanced scientific knowledge farther at a single stride than centuries of patient observational inquiry has been able to do, before the discovery of the applicability of the theory. But this same history proves that mathematical advance has much more frequently been brought about by the solution of problems met in the pursuits of natural science than has the discovery of new possibilities of applying mathematics brought about scientific advance. Furthermore, comparatively few who study mathematics in the public schools ever become, or desire to become, mathematical experts in any high sense. Most persons study these branches in the hope that they will be of help in the mastery of other fields of mental activity. To these persons mathematical study is of value chiefly in defining and clarifying the ideas, and in organizing and relating the facts and phenomena of the physical world. It is thought, therefore, that the mathematical sciences will take on a newness of life by bringing the elementary stages of their study back to the original mooring, by presenting the foundation principles as means of revealing certain aspects of the world of physical phenomena.

But as all definite ideas must reach the mind through the senses, even the prospective mathematical specialist can best begin his study by laying a broad and solid foundation from materials drawn from the world of concrete phenomena. He is able thus to lay a firmer and more enduring hold on those central truths of his science, from which his later resources are largely to be drawn. This method of approach, by exalting psychological above logical requirements, conforms to the pedagogical principle that the determining factor for both matter and method is the learning mind rather than the subject of study. The needs of both a general and a special training are thus seen to be identical, so far as the foundation is concerned.

In the following syllabi the aim has been to make the needs of the learning mind the organizing idea. No attempt has been made, therefore, to distribute the subject-matter in any mutually exclusive way under the various special headings. What is suggested in the astronomical syllabus is quite as much mathematics as astronomy. The class-work will be based as largely as possible under the circumstances upon observational data taken in the open field, or under the open sky, by the members of the training class.

It is not intended to teach upon all topics suggested in the accompanying outlines during the summer. Such special topics will be selected for study as seem best suited to the needs and wishes of the class after it has met.

Syllabus on Astronomy.

Lecture and Lesson I.

Topic: A Preliminary Survey of the Sky.

1. Rules for recording.
2. The fifteen brightest stars visible in Chicago. Magnitude in sense of brightness defined.
3. Colors of these stars.
4. Allineations and triangulations on neighboring stars for purposes of identification.
5. Various methods in use for designating the stars.
6. The constellation of the Great Bear. The Dipper. The Pointers. Polaris. The Guards. The Lesser Bear. The Dipper in the Lesser Bear. " Measuring sticks" for star distance.
7. The constellation of Cassiopiæ's Chair. The equinoctial colure. Siderial time. Determination of the meridian.
8. The zodiacal constellations.
9. Directions for observational studies.

Lecture and Lesson II.

Topic: Observational Study of the Sun.

1. Study of solar heat. (a) Heat at focus tested experimentally for a terrestrial source. Laws I., II., and III. (b) Heat at focus for solar rays. Laws applied to sun's heat.
2. Sunlight studied experimentally. Images formed by interstices between leaves. (a) Sunlight compared with artificial light. (b) Sunlight compared with moonlight or starlight.
3. Other measurable effects of solar rays. Chemical effects. Magnetic effects.
4. Observational study of the globe of the sun.
5. Positions and motions of the sun.
6. Make a drawing from day to day of a sun spot.

References: Young's, *The Sun;* Ball's *Story of the Sun.*

Lecture and Lesson III.

Topic: Observational Study of the Constellations, Stars, Time, etc.

1. The zodiacal constellations and signs. Uses.
2. The zodiacal light. Counter glow.
3. Other conspicuous constellations.
4. Estimation and determination of time, from star observations.
5. To locate the meridian of a place astronomically.
6. Apparatus needed.

References: Upton's *Star Atlas;* Schurig's *Atlas;* Poole's *Planisphere;* Young's *Uranography.*

Lecture and Lesson IV.

Topic: Observational Study of the Moon. (Opera glass.)

1. Look up almanac date of new moon. Begin observing moon as soon thereafter as possible.

2. Face appearance (both day and night). (a) Color and color variation of moon's face. (b) The crescent itself. (c) Markings upon the moon's face drawn.

3. The moon's motions. (a) The motion toward the west. (b) The motion toward the east. (c) The motion of rotation.

4. The moon's path among the stars and orbit.

5. Points of the compass. Measure the moon's altitude and azimuth.

6. Estimate the moon's right ascension, declination, longitude, and latitude (celestial). Equinoxes.

7. What light do your lunar studies throw on the following from Barnaby Rudge? "It was a fine dry night and the light of a young moon, which was then just rising, shed around that peace and tranquillity which give to evening time its most delicious charm."

References: Howe's *Descriptive Astronomy;* Poole's *Lunar Atlas.*

Lecture and Lesson V.

Topic: Observational study of planets, bright stars, meteors, clusters, etc.

1. Methods of naming these objects.
2. Colors of planets and stars.
3. Brightness and steadiness of light.
4. Positions of planets from week to week.
5. Location and study of meteor paths.
6. The planets themselves.
7. Look up a conjunction in the almanac, watch, and describe it.

References: Ledger's, *The Sun: Its Planets, etc.;* Jayne's, or Ayer's Almanac.

Lecture and Lesson VI.

Topic: The Common Almanac.

1. Brief description of standard ephemerides.
2. Compilation of the common almanac.
3. Use of the almanac.
4. Column headed "Aspects of the planets, etc."
5. Compare sun's declination for July, 1900, of Old Farmer's Almanac with Ephemeris values.
6. Examination and explanation of Calendar page of Jayne's Almanac.
7. Historical items relating to common almanac.

References: Jayne's, Ayer's, *The Old Farmer's* the *Connecticut,* or the *New England* almanacs. Articles on Almanac in *Popular Astronomy,* Vols. II. and III. by MacFarland.

Lecture and Lesson VII.

Topic: Observational Studies of Variables, Double Stars, the Milky Way, Zodiacal Light.

1. Stars of Great Dipper and Little Dipper arranged in orderly sequence of brightness.
2. A bright short period, variably arranged in a sequence with neighboring stars.
3. Color and color change from one time of day to another, from star to star.
4. Doubles identified and studied.
5. Trace and delineate the Milky Way.
6. Identify and examine nebulæ and clusters. (Telescope.)
7. Study the Constellation of Leo with an opera glass or a small telescope.
8. Mars' and Venus' change in brightness dependent upon position in orbit.

References: Bowen's *Astronomy by Observation,* and Serviss' *Astronomy with an Opera Glass.*

Lecture and Lesson VIII.

Topic: Home-Made Apparatus, Globes, Maps, Charts, etc.

(1), Meridian mark; (2), Gnomon; (3), Crude Altazimuth; (4), Tycho's quadrant; (5), The Cross-bar; (6), Transit Tube; (7), Home-made equatorial; (8) Foucault's pendulum and model; (9), globes filled out by student; (10), Maps and charts drawn by student; (11), Frame to catch image of sun; (12), Rogers' star finder; (13), Latitude box; (14), Frame to show varying brightness of solar disc.

Syllabus on Arithmetic.

I. Qualifications of the teacher of arithmetic.

1. In mathematics. 2. In physical or natural science. 3. In psychology. 4. In pedagogy.

II. Subjects to be thoroughly taught.

1. Combinations of numbers up to 100. 2. The fundamental operations. 3. Fractions, common and decimal. 4. Greatest common divisor; least common multiple and factoring. 5. Compound numbers taught objectively. 6. Simple proportion and but little, if any, compound proportion. 7. Percentage and the more common cases of interest.

III. Subject matter, which should be omitted, or shortened, or postponed.

1. Omit all of the apothecaries' weight and English money except tables. 2. Most of commercial arithmetic and compound propor-

tion. 3. Stocks and bonds, insurance, exchange, partial payments, annuities, etc. 4. Replace nearly all of what is called advanced arithmetic by algebra and geometry.

IV. Other matters which should be dropped or abandoned.

1. Unnecessary definitions and rules not reached as generalizations. 2. All artificial problems. 3. Long and tedious addition and subtraction problems. 4. Abstract problems depending upon very small fractions. 5. All mathematical conundrums and problems whose language is beyond the pupils. 6. All but a reasonable number of "money problems," and most purely technical problems. 7. The time thus saved should be put upon practical applications of algebra and geometry.

V. How should arithmetical subjects be taught?

(1) Objectively, (2) with mathematical laboratory, and (3) through measurement.

VI. Various ways in which arithmetical processes may be taught.

(1) By teaching figures instead of number; (2) by using objects of no intrinsic interest; (3) by measuring. (See *A Study in Measuring Quantity*, under Topic V.)

Syllabus on Geometry

Unless other than logical claims can be urged in favor of the study of geometry its place in school curricula may well be taken by more useful studies. That geometry has a high practical value is clear from the fact that its central truths are indispensable to successful study in any of the following lines:

1. In nature study; (2) in surveying, both plane and geodetic; (3) in the theories of equilibrium and of motion; (4) in strength of materials; (5) in hydraulics, and (6) in astronomy.

Outline of Work Needed to Interpret Facts Relating to the Chosen Tract

1. Introductory questions. 2. Problems in pacing. 3. Form of tract selected for study, both as a whole and as to its parts. 4. Area of surfaces upon it. 5. Topographical features. 6. Ranging and measuring lines upon the tract. 7. Areas of wind surfaces of trees and structures upon it. 8. Test any structures as to orientation and stability. 9. Value of some of the large trees for lumber. 10. Rate at which streams are transporting soil and silt to outlets. 11. Cost of draining and filling. 12. Cost of removing the soft earth and puddling the bed of a pond for an artificial lake.

In connection with astronomy, geometry will furnish valuable information of the sort suggested under the following headings:

1. Location and fixation of a reference meridian. 2. Determination of the latitude and longitude of points of reference. 3. Amount of solar heat incident upon the surface of the tract hourly, daily, yearly. 4. Energy to which the above is equivalent. 5. Quantity of sunlight incident upon the tract. 6. Diurnal variations and disturbances of the magnetic needle. 7. Study of *seiches* in Lake Michigan. 8. Problems relating to the strength of timber from the tract.

Aid Requested from Other Departments

All departments are requested to aid in the collection of material.

From physics: An experiment to show the amount of solar heat and light incident upon a given area of the earth's surface in a given time.

From botany: Explanation as to how to obtain the evaporating surface of the foliage of a green tree.

Geometry must be taught more with reference to its central principles and less with a view to securing logical beauty and completeness. Nearly all of geometry is based upon half a dozen or so fundamental principles; these principles stated and discussed.

The order in which the principles of geometry should be taught is suggested by the subdivisions of— 1. Intuitional geometry. 2. Observational geometry. 3. Formal geometry.

Each of these branches will be explained and discussed fully.

Syllabus on Algebra

An arrangement of subjects similar to the one given here would furnish a much better course of study in mathematics than does the customary sequence.

Number. Arithmetic. Arithmetic and algebra. Algebra. Algebra and analytic geometry. Intuitional geometry. Observational geometry.

Observational geometry (with simple reasoning). Formal geometry and beginning trigonometry. Trigonometry, with modern geometry.

The guiding principle is to begin the new subject always before the old one which leads to it has been completed.

Algebra is only arithmetic extended by the introduction of the following new ideas: 1. The use of letters to represent generalized number. 2. The use of the minus sign as a symbol of quantity. 3. The equation as a tool for the solution of problems. 4. The use of fractional and negative exponents. 5. The use of irrational numbers. 6. The use of the variable and its limit.

The sequence and manner of presenting these new ideas should be such that the motive for each shall be felt from the beginning. This can be done best by taking the equation as the organizing and developing idea for both matter and method in algebra.

Many of the operations of arithmetic must be restudied in algebra in the light of these new ideas.

The subject of factoring, which is so important and so troublesome to the learner, as also to the teacher, may be developed easily from three simple principles.

The theory of exponents and logarithms should be shown to rest upon these four elementary principles:

$$a^n \times a^m = a^m + {}^n;\ a^m/a^n = a^{m-n};\ (a)^{mn} = a^{mn},$$
$$\text{and } (ab)^n = a^n b^n,$$

where ^{m} and ^{n} may be integral, fractional, positive, or negative. These principles should be carefully taught and their true relations to these theories clearly seen by the pupil.

The solution of the quadratic equation, and particularly of simultaneous equations depending upon quadratics, is very greatly aided by graphical methods.

Practical applications to second degree simultaneous equations arising out of practical problems.

Practical applications arising out of the geometry and trigonometry needed to render the selected area intelligible to grammar and high school pupils.

The formulas for stresses in beams, in columns, for flow of water, and for other subjects treated, in the strength of materials, and hydraulics, furnish many instructive applications of algebraic principles, and should be freely drawn upon by the teacher.

Mathematics in the Primary Grades

Gertrude Van Hoesen

The chief purpose of the following part of the course in mathematics is to show the place and function of arithmetic in the primary grades. The outline presents various phases of work illustrating how essential an understanding of the fundamental principles and processes of arithmetic is in the most common affairs of life. Within the school, it is quite as essential that the child's work in arithmetic should be closely related to his life and interests. But it must be proved that such work is not only more interesting to the child, but also more educative.

The work in the outline below appears in an unrelated form, and is intended only for use as reference in the classroom discussion.

Discussion of methods of teaching numbers:

There are three ways—one prevailing, one in partial use, one which has never been fully carried out in any school.

The first method includes the notation and numeration of figures; adding, subtracting, multiplying, dividing; committing tables to memory; doing isolated problems; following a so-called logical order from adding to banking; learning rules and following them; learning definitions without understanding them.

In the second method blocks are used and other objects, such as shoepegs, sticks, and colored dishes; this includes counting, marking, and picturing. The objects have no interest beyond their mere use, and the results have no value to the child. Yet the constant drill in comparison and the finding of the ratios of actual quantities gives the child a certain power in mental imaging. This is a great improvement upon the mere memorizing of the names of figures and the logical following of unpedagogical rules.

In the third method number is used for the legitimate purpose of measuring quantities that must be measured in order that conclusions sought by the pupils may be reached—not numbers for numbers' sake, but for their use.

It will be the endeavor, in this course of lectures, to use the third method, and to show that in order to teach science in its various branches—geography, which requires knowledge of distance, area, volume—history, in which dates, census records and the arts and industries of people are studied and compared—and manual training, which depends upon accurate measurements—it is absolutely necessary to teach number.

It is impossible to outline in this syllabus how number is used in teaching all of these subjects, but the following brief examples illustrate its use in geography, manual training, and physical training.

I. Geography.—This work will be used only when the results of such comparisons are of immediate practical use in geographical imaging.

Definite measuring in geography necessitates the use of— 1. Linear Measure.—The estimation and comparison of distances, length of coast line, length of rivers, height of mountains, depth of oceans. 2. Square Measure.—Area, comparative sizes of river-basins, continents, food areas, mining and forest areas. 3. Measure of Bulk and Volume.—Estimation and comparison of the amounts of material carried down by rivers in a day, month, or year. 4. Measure of Force and Energy.—Comparative temperatures and atmospheric pressures, etc. 5. Measurement of Time.—Estimation of distances in relation to standard rates of travel.

Climate.—All the facts gathered from the daily records concerning the temperature, direction of wind, rain, and snow, length of day, etc., are valuable as data only as they arouse in the mind of the child an approximately accurate idea of local climatic conditions. Yet the constant accumulation and comparison of these facts brings about the use of all the fundamental operations of arithmetic, and gives the necessary drill in the manipulation of figures. Through the interest in these observations, skill is acquired at the least expense of time and effort.

II. Manual Training.—The first step must be the working-drawing or plan of the object to be constructed; estimation of cost of suitable materials. The second step is the execution of the plan; for instance, the children need a pencil-box and decide that the dimensions may be 9x3x2 inches, and the material a certain kind of wood. The working-drawing consists of three rectangles: the first, 9x3 inches, represents the top and bottom; second, 9x2 inches, represents the sides; the third, 3x2 inches, represents the ends.

1. Compare length, breadth, and height. How many square inches of wood will actually be required to make the top and bottom? The sides? The ends? The entire box? If the board from which you cut the wood is 12 inches wide, how many inches of board will be needed when you reach the manual training room, allowing two inches between pieces? How many inches of board must necessarily be discarded? Knowing the cost of wood, estimate cost of material for box.

2. What theorems in geometry that the class can readily see are demonstrated in making this box? (a) From a point in a straight line one and only one perpendicular can be drawn; and (b) Converse of "a." (c) All right angles are equal. (d) Two straight lines perpendicular to the same straight line are parallel. (e) Converse of "d." (f) Two rectangles having equal bases and equal altitude are equal. (g) Two rectangles having equal bases are to each other as their altitudes; *i. e.*, comparison of bottom and side. (h) Two rectangles having equal altitudes are to each other as their bases; *i. e.*, comparison of side and end.

NOTE.—As the articles needed become more difficult in construction, the problems become proportionately difficult both in arithmetic and geometry.

III. Physical Culture.— Consideration of growth and exercise as a foundation for the study of hygienic and sanitary conditions.

Accurate physical measurements of children in October, January, and June. Height, weight, chest measurement, and chest capacity necessitate the use of measures of length, weight, and bulk. Compare the measurements of a normal child made by the Child Study Bureau. Chest measurement, preceded by study of properties of air, examination of exhaled air, test for carbonic acid gas. Problem: What is the average amount of air inhaled in one breath?

The new units are gills, pints, quarts, and gallons. Experiment: Use a gallon jar scaled on one side; invert over a pan of water and draw out as much air as possible in one inhalation through a rubber or bent-glass tube. What is the amount inhaled by each member of the class? Amount inhaled by the entire class? Average amount inhaled by each person in one inhalation? How long would it take to exhaust the air in the room if none of it were rebreathed? A bedroom is ten feet square and eleven feet high. How long would the enclosed air supply two persons? What would take place in the air if the room were unventilated?

Circulation: Count the number of heart beats and pulsations in wrist and temple per minute. Do they correspond? Find average for class. The blood is about 1-13 of the weight of the body (Foster). It has been estimated that at each systole the heart sends out 6.3 ounces of blood (Martin's *Human Body*). How much blood passes through the heart in one minute? One day? How many heart beats are necessary for all the blood in your body to pass through? Relation of pulsation to respiration: How many respirations in a minute? How much blood do you purify in one minute? What part of the air is oxygen? Then, what amount of oxygen do you use in one respiration?

All points will be illustrated by the work of the children in the various grades, as in the following outline, in which the function of arithmetic in the study of the home is shown.

But on account of limited space only those forms of mathematics in most common use in daily life will be suggested, and that in the briefest possible way.

IV. Equipment of the Home.—1. The number and value of the utensils necessary in the kitchen. 2. The number and value of the dishes necessary for proper service. 3. The amount and value of napery, tablecloths per yard. 4. Napkins per dozen. 5. Carpeting per yard. 6. Wallpaper per bolt. 7. Upholstery per yard. 8. Bed linen per yard. 9. Furniture.

Food.—(Note problems in chemistry and physics involved.) Hygienic dietary. Physiology of digestion. Relation of constituents of food to nourishment which they contain. Quantitative analysis of foods as to starch, albumen, carbon, fat, mineral matter, etc. Computation of the amount of the different food principles necessary for a normal child and adult. Comparison of amount of tissue-building materials with energy-producing materials. Inference.

Cooking.—Scientific Cooking.—Estimation of effects of temperature, water, various forms of bacteria, and the processes of digestion upon food constituents. Necessary uses of measures of weight—avoirdupois; of bulk—dry and liquid; of money—dollars, dimes. Means of measuring time and temperature. Success of practical cooks as dependent upon the unconscious accuracy of their judgments and the mathematical exactness of their measurements. Preparation of simple lunch, involving (a) a knowledge of food principles, (b) estimation of amount of articles selected, (c) estimation of the cost; (d) careful preparation of food in regard to food values and proportions.

Physics.—Incidental observation of evaporation and ebullition in cooking experiments. 1. Evaporation takes place at all temperatures, the amount varying with the exposed. surface. 2. The rapidity of evaporation depends upon the kind of liquid. 3. Temperature of the boiling point remains constant. 4. The boiling point varies with the kind of liquid.

V. Farming.—The necessity for number in all farm work is illustrated in the following report; it represents a crop of corn grown on 9½ acres of land in Massachusetts:

1. Preparatory plowing and harrowing,	$ 5 00
2. Fertilizers; *i. e.*, 462 lb. of sulphate of ammonia, 177 lb. of muriate of potash and 163 lb. of bone-black treated with 81 lb. of sulphuric acid----------	33 00

3. Mixing, carting and spreading fertilizers	$ 1 40
4. Seeding and planting	1 60
5. Cultivation and hoeing	5 00
6. Cutting and stacking	3 00
7. Husking	11 50
8. Storing the fodder	7 50
9. Interest on land and taxes	5 50
Total expense	$73 50
Besides the corn there was harvested 5.75 tons of fodder, to be sold at $8 per ton	$46 00
Actual cost of 115.5 bu. of corn	27 50
Actual cost of 1 bu. of corn	.238

When applied to the vast farms of the Middle States the problems increase. Especially important is the question of transportation there. (a) Railroads, surveying, etc. Continuous use of geometry and trigonometry is necessary. (b) Commerce illustrated by duties: From the Daily News Almanac find the amount of money paid to the Government for imported goods. How has the Cuban war affected this? What articles which we use daily belong to the list? Give a list of problems which show the value of these articles before paying the duty, value afterward and value including commission to agents for buying them. (c) Census. The growth of the population shown by comparison of the first census with succeeding ones.

VI. Industries.—In the great industries and manufacturing plants and in our shops there is no problem too small to be of significance to the manager. Mathematical precision is at the basis of success. Number is involved in every move, from building and furnishing the plant, from the measurement and purchase of raw material, price of labor included, to the finished product.

Department of Art

John Duncan   Antoinette B. Hollister   Clara I. Mitchell

Three art courses will be given: Mr. Duncan, head of the department, will present a course in the principles of art, with illustrations. His work will begin July 15th, and continue for three weeks.

Miss Hollister's course will be clay modeling and painting, and Miss Mitchell's, industrial art with special relation to textile fabrics.

The design of these courses is to make modeling, painting, and drawing the means for self-expression and constructive activity, correlating them with all other subjects, and using them in the same way and for the same purpose that speech, oral reading and writing should be used.

The child is recognized as a bundle of activities, eager to manifest himself in all possible ways.

Art as an outlet of personal energy satisfies normal desires and reacts upon growth and development.

The exercises will be simple and carefully adapted to elementary teaching; much of the work will be done in the field.

Principles of Art

JOHN DUNCAN

I. Art Teaching in Relation to Nature Study

The course will begin with the simple and conventional methods which young children actually develop for themselves, and will thence progress through practical demonstrations in schoolroom and museum to open-air work in school garden, botanic and zoölogical garden, park and country.

As far as possible the study of nature will be completed by the correlated treatment of human occupations, thus leading to—

II. Figure Drawing and Composition

Here will be indicated some methods of study and teaching taking the place of the usual work of a life class.

In both the above sections progressive exercises will be set in drawing, not only from direct observation, but from memory, and also from imagination.

III. Art in Home, School, and City Life

Actual modes of decoration of living rooms, schoolrooms, etc. Possibilities of improvement in simple ways.

External aspect of buildings; as determined from within and from without; and with varying influence of material conditions and of ideals.

The changing aspect of cities, from age to age. Examples from Athens, Rome, Florence, Edinburgh, Paris, Chicago. Disadvantages and possibilities of modern cities.

IV. Art in the Teaching of Literature and History

Examples:

(1) From contemporary monuments, e. g., Roman, Mediæval.

(2) From imagination, e. g., *Orpheus*, *Jason*, *Ossian*, *Arthur*, *Joan of Arc*.

V. History of Art

The Historic Styles: Egyptian and Assyrian; Greek and Roman; Celtic, Byzantine, and Romanesque; Gothic; Renaissance. These styles being viewed not as fixed standards of perfection, but as phases of (largely continuous) evolution or degeneration. The Paris Exhibition of 1900, with its medley in survivals and renaissance. The Assyrian Tree of Life, and its transformation through the ages.

VI. The Principles of Design

Illustrated by the selection or invention of simple motives, and by their development and application to different technical processes, especially those more readily available in school.

The lectures will be illustrated by the lantern, by photographs and reproductions, and by blackboard drawings. Each will be accompanied by appropriate practical work, beginning with the rapid copying of the lecturer's blackboard and other illustrations, but also as far as possible rising to the preparation by the students of original designs in the different styles in outline or in color.

VII. If time and conditions allow, a beginning will be made in *Associated Art Work*, i. e., the best students will be selected to assist in planning and carrying out a simple scheme of decoration.

Painting and Modeling

ANTOINETTE HOLLISTER

Botany.—(1) Painting and modeling of the flora of the region selected for investigation. (2) Studies illustrating peculiarities or significant changes of landscape.

Geography.—(1) Simple relief maps of surfaces observed. (2) Studies of mountain and wave forms. (3) Studies of racial types.

Zoölogy.—Animals and insects—their structure, homes and habits.

History.—(1) Pottery. (2) Architectural forms. (3) Primitive dwellings.

Literature.—(1) Illustrations of myths, and other stories.

Mathematics.—(1) Typical forms. Preparation for geometry.

A large collection of photographs, representing the best art, will be used in teaching.

Materials.—Paints—colored crayons; pencils; charcoal; clay; portable modeling and painting tables; modeling aprons.

Any of the above materials may be purchased at the Supply Store of the Chicago Institute.

Industrial Art, as Illustrated in Textile Fabrics

Clara I. Mitchell

I. Design. Comparison of samples of fabrics as to interest of design. (Note: Great care should be used in the selection of designs. Only good ones, and, if possible, the best, should be given to children for study.) Lessons and practice in designing such fabrics as children find immediately interesting through their work, e.g.: Covers for seats and cushions, curtains, scarfs, belts, table-covers; rugs and costumes which may be used in development of history lesson. Baskets woven of fiber willows and Indian wood splits. Design to be planned, drawn, and painted to fill spaces required, e. g., border circles, squares, oblongs, diamonds, ovals, triangles, and hexagons. The principles of repetition, alternation, and radiation explained and illustrated as elements in design. Study of classic patterns. Conventionalization of perfect form. Simplicity of design; evenness of distribution; variation of lines; contrast of forms. Weaving or embroidery of articles which are needed for use of children at home or at school; appropriate gifts; such simple and primitive textiles as will present to children the fundamental problems of the industry, with the opportunity for invention, construction, and artistic expression;

as, for example, small rugs, curtains, holders, bags, fragments of suiting, of coarse and simple weaves. Weaver's method of design illustrated.

II. Color. Textile study a development in sense of color harmony. Color in design as indicated above. Use of water-color wash. Discussion by children of color combinations. Study of good and harmonious combinations. Educative materials for study of color: Bird's plumage, insects, shells, flowers, leaves, minerals, and soils. Necessity of training in sense of color harmony. Conscious knowledge of relations of colors, tones, hues, and shades. Charts and guides for use of teachers only.

III. Preparatory work for younger children: Basket-making, primitive weaving, drawing threads of coarse canvas or burlaps, and weaving in decorative colors and designs. . Simple netting.

REFERENCES.

Jacquard Weaving and Designing, T. F. Bell. *Textile Designing*, Jacquard. *Textile Fabrics*, Fischbach. *Textile Fabrics at the South Kensington Museum*, Rev. Dan Rock. *Tapestry*, *The Industrial Arts*, published by Chapman Hall. *Ornamental Design for Woven Fabrics*, Stephenson and Suddart. *Hand Book of Ornament*, Frank Sales Meyer. *Claims of Decorative Art*, Walter Crane. *Application of Ornament*, Lewis F. Day. *Grammar of Ornament*, Owen Jones. *Illustrated Plates on the History of Art*, Prang. Chevreul on Color. *The Theory of Color*, Dr. William Von Bezol. *A Class Book of Color*, Mark N. Maycock. *Color in the Kindergarten*, Prang.

NOTE.—Under the Department of Applied Pedagogy will be found a syllabus of the Round Table Talks given by Miss Mitchell upon Textile Fabrics, in which questions of weaving, dyeing, and sewing will be considered in detail.

Speech, Oral Reading, and Dramatic Art

Martha Fleming

Reading is a means of thinking; it focuses experience, realizes ideas, and forms habits. It is incidental to all studies. Little children are full of dramatic expression. It is instinctive in the human soul, and is the common property of the race. Manifestations of the dramatic instinct clearly observed in primitive peoples and in little children are dancing, imitation, impersonations, and dramatic plays; through these the child may consciously link himself with the past of the race, with the primitive peoples still living, and at the same time learn to know and express himself. Dramatic instinct makes the great events of history and the phenomena of nature real to the child.

Emotions are potent factors in determining action; what we like or dislike, what rouses our anger, fear, or enthusiasm, determines our action. Therefore a child should read only good literature, literature which appeals to the higher emotions, such as love, courage, and patriotism. The importance of correlating reading with the other studies, of using it at the time and point when the connection is closest, is thus apparent. Expression of emotion either deepens and intensifies thought or acts as the confessional, exorcising the demons of anger and hate. It is beneficent and cleansing, and makes for harmony and sanity.

Since imitation is a potent factor in education, and action is one of the first things imitated, dramatic training is of great importance to the teacher. Gesture is truth to the child; he does not *hear* what you say—he *sees* what you do. If the children are to read well, the teacher must read well herself. If the teacher undervalues emotion, and does not see its direct relation to thought, the children will soon learn to think that emotion must be concealed, and will show the evil effects of repression. If the teacher's voice rasps, and cuts into the sensitive child ear, what is the effect upon the child's voice? Upon his moral nature? The teacher who understands the significance of the forms of expression in the body and voice of the child has at command one of the best means of studying him. Other things being equal, the teacher whose training has given her dramatic power is a better teacher of any subject than one limited in this power.

Teachers coming to the Summer School to study for skill will naturally divide themselves into two classes: those who are beginners and those who have acquired a certain degree of power through experience. The aim of the course will be to help teachers to acquire the ability to think rapidly and intensely by means of the printed page, and to express thought and emotion in movements of the body, in voice and speech. The training in these classes will be adapted to the needs of the teachers in the schools. Criticism, while recognizing individual strength and limitations, will aim to correct faults by stimulating to more vivid imaging and more adequate expression. There will be study and interpretation of some of the masterpieces of prose and poetry. Scenes from some of the classic and modern dramas will be analyzed and presented. The power to think and express thought clearly before an audience will be brought out by means of short speeches and debates; and since every teacher needs to know how to conduct a public meeting, some drill on parliamentary procedures will be given.

The literature used in these classes will be that which is most closely related to the subject-matter taught in History and Nature-Study. As a preparation for this work, the teacher would do well to select a scene from a drama or poem, study it, live with it, and come to the class ready to express what it means to her. It is suggested that some preparation be made upon the following selections: " How the Leaves Came Down," Susan Coolidge; " My Shadow," Robert Louis Stevenson; "The Wind and the Moon," George McDonald; "The Pied Piper" and "Hervonte Riel," Robert Browning; " The Tar Baby," Joel Chandler Harris; " Paul Revere's Ride," Longfellow; "Julius Cæsar," Act I, Scenes I and II; " Who Stole the Bird's Nest?" " Owl against Robin," Sidney Lanier; "The Gamin," Victor Hugo; " Sheridan's Ride," Buchanan Read; "John Burns of Gettysburg," Bret Harte; "Oh, Captain, My Captain," Walt Whitman.

I. **Reading.**—Definition—Motive.—A means of thinking, of focusing experience, of realizing ideas, of forming habits. Compared as a mode of thinking with observation. Child's earliest interest in reading; whence the desire to learn new words? Suggestions as to methods of teaching.

II. **Oral Reading.** A mode of expression. Compare reading and talking as modes of expression. Function and place in education. Relation to other modes of expression. Agents of expression. Motives governing the desire to read aloud. Ideal conditions. Value of story-telling by children; of discussions on subjects of interest in the social life of the school; of drill upon literature committed to memory. Shall a child who is reading orally be allowed to struggle with the pronunciation of a word? How shall he be kept unconscious of his difficulty? Function of sight-reading. Character of material used for sight-reading.

III. **Dramatic Expression.** Use of the dramatic instinct in character-building and vitalization in educational methods. Relation to Nature-Study and History. Illumination of words by tones of voice and movements of body. Relation to other modes of expression. Dramatic reading a means of training the emotions. Emotion the basis of all artistic expression. Special function of dramatic expression in the upper grades. Expression the natural result of all intense thinking. Effects of repression.

IV. Selection of Literature.—Dramatic literature should be chosen for drill. Analysis and interpretation of selections adapted to children in different grades. Lists of selections to be used with History, Geography, and Science in the different grades. Principles upon which a story or selection may be cut or adapted for oral reading. How to incite children to study a selection. Value of silent, independent study of text. Over-analysis. Criticism. Self-consciousness. Affectations. Genuine expression. Study of individual children. Children as judges of literature. Relation of story to the drama. Dramatic representation of stories. Suggestions as to manner of telling a story to children.

V. Gesture.—Gesture a universal language, modified by nationality, temperament, and habits of life. Function of gymnastics as a preparation for expression. Gymnastics which have the forms of expression. Movements which express fatigue or physical weakness; movements which are the spontaneous expression of thought and emotion. Pantomime: The expression of thought and feeling by bodily movements. Bearings, attitudes, and inflections. Poise. Relation to health, to expression. Sitting, standing, walking. Good positions in seat work and recitations. Exercises, plays, and games for making good carriage of body habitual. Rhythmic movements to music. Energy. Relation to health and expression. Control and direction of energy.

VI. Voice.—Power and significance of the voice in spoken language. Voice quality and intonations the expression of character, of emotional life, and physical conditions. Voice in speech and song. Training the ear to distinguish voice qualities. Management of breath. Force. Pitch. Quality. Inflection, accent, emphasis, pause, rhythm. Practice for making the voice pure, flexible, responsive, and effective. Tone projection. Care and management of children's voices.

VII. Speech.—Is there a standard English? How determined? Provincialisms; dialects. How to train the ear to recognize speech qualities, to discriminate the elements, such as vowels, glides, and consonants. Bell's vowel and consonant tables. Training the speech organs. Formation of vowels; articulation of consonants. How shall the child be helped to speak good English? Value of phonics. Value of drill upon words. Habits of speech. The most economical way of correcting bad habits. Causes of speech defects: (a) Defective hearing. (b) Abnormal conditions of mouth and throat, such as enlarged tonsils, adenoid growths, narrow arch, mouth breathing, tongue-tie, and defective arrangement of the teeth. (c) Imitation of speech defects. (d) General nervous conditions. Diagnosis and treatment of speech defects. Value of such knowledge to the teacher.

VIII. Public Meetings.—Practice in writing and preparing material for delivery in public. Thinking before an audience. Short speeches. Debates. Orations. Parliamentary law and usage. The teacher in public assemblies. Morning exercises. Special day exercises. Educative value. Basis for arrangement of programs. Discussions once each week of the teaching of oral reading, as observed in the model school.

Department of Physical Training

Carl J. Kroh Caroline Crawford

The courses in Physical Training are divided into terms of three and six weeks respectively. The two short terms will deal with the essentials of the subject, in periods of actual work and in discussions. The fundamental procedures in gymnastics will be illustrated, together with the practice, and the course will include the study and development of games and plays suitable for school purposes.

The full course of six weeks is designed for a more comprehensive study of the principles of gymnastic development, and will include the adaptation and direction of schoolroom, playground, and elementary gymnasium work. Educative and recreative gymnastics, theories, and methods of training will be dwelt upon in a general way in order to establish the pedagogical order and value of physical exercises.

Equipment, organization, and instruction plans will be proposed and discussed in detail. Instruction courses will be outlined covering the eight divisions of the subject, adapted to the different school grades and high schools, and based on exercises appropriate to the various ages of school children.

Special Courses

Corrective Gymnastics. The purpose of this course will be to acquaint teachers with the remedial forms of exercise and to enable those who have had some experience in teaching gymnastics to give remedial aid to children who show the effects of bad postures and other defects incident to school life. Special study in the analysis of movement will be required. The course will include reviews in anatomy, physiology, applied anatomy, and anthropometry. Special conferences will be called for the discussion of school hygiene—seating, ventilation, position for motor work, length of school day; home hygiene—diet, clothing, bathing, sleep; and public hygiene—soil, drainage, water, and air.

Dancing and Dancing Calisthenics.—Teachers in quest of personal improvement and recreation, who wish to avail themselves of the opportunities offered in either the elementary or advanced courses, may form special classes for the study of dancing and dancing calisthenics. Participants will conform to the general rule, and provide themselves with the regulation gymnastic costume.

Fencing Courses may be arranged for separately. Individual or class instruction will be given.

For lectures on the relation of physical training to all other work, the relation of mind and body, the play element in education, diagnosis of children, nervous signs, fatigue, and the relation of physical training to the applied sciences, see syllabi of other departments.

Stress will be placed upon the practical work in all departments. It is advised, therefore, that a little moderate exercise be taken daily.

The theoretical and practical studies will be conducted during the last two periods of each morning The second morning and first afternoon periods will also be known as special practice periods, and will be devoted to individual practice.

Persons enrolling for instruction in the short-term courses should reserve at least two hours for their work; i. e., one period for instruction and one for special practice. Those enrolling for the full term should reserve two instruction periods and one practice period.

Participants in the different courses are required to wear the regulation gymnasium suit and slippers.

The courses in Corrective Gymnastics may also be taken as part courses by students of the general courses.

BOOKS OF REFERENCE:

Human Anatomy. Morris.

American Text-book of Physiology.

Physiology of Exercise. Dr. F. W. Schmitt.

Physiology of Exercise. La Grange.

Anthropometry and Physical Examination. Seaver.

Papers on Anthropometry. American Statisical Association.

Kindergarten Training Department

Bertha M. Payne Anne Elizabeth Allen

The courses offered in the kindergarten department of the Summer School are designed to help both the kindergartner and the primary teacher, in the belief that both need in most fundamentals the same study. When both classes of workers have a better grasp of the dominating instincts, impulses, and interests of childhood during the kindergarten age and the first school years the present break between the first grade and the kindergarten will disappear. The kindergartner needs an actual working knowledge of children beyond the play period; without it she cannot rightly measure the bearing of her training upon the child's later development. Similarly, the primary teacher needs an understanding of children in the play period of development, in order correctly to understand the youngest in her group. When she knows the conditions under which her class fresh from the kindergarten has lived, she can carry the children on without waste of effort.

The youngest children in the kindergarten are satisfied with simple forms of activity not aimed toward permanent results. When a little older they begin to plan, but are easily turned aside by accidents and suggestions; when still more developed, they plan more carefully and carry out the plans more persistently. When a child can plan a piece of work and keep on developing it from day to day he is usually ready for the more conscious work of the first grade. The play impulses, however, do not then stop short, but recur continually in different forms, which should be understood by the teacher and used in the best way. This is where a study of Froebel and of the kindergarten of early childhood proves itself helpful.

The representative plays of the kindergarten may develop into fuller dramatizations. The simple games may be followed by those demanding more skill. The building plays of the kindergarten may go on or be followed by construction work. Sloyd follows the easier occupations of the kindergarten. Singing, drawing, painting, and modeling increase steadily in definiteness and feeling for life.

For both kindergartner and teacher, then, we shall make a study of the psychology and pedagogy of play and work from earliest childhood into the first school years, also of the demands that life makes upon the child; and we shall consider the best means of keeping him in the right attitude toward others.

In these three endeavors we shall find great assistance from the interpretations that Froebel has given to child manifestations. What we find in Froebel may be supplemented, illustrated, or criticised by the later work in genetic psychology and child-study. We will use from these sources all that bears most directly upon the questions of play, toys, games, language, drawings, feeling for nature, and religious feeling.

Observation in the kindergarten and in the first grade will be found very helpful to those taking this course.

Syllabus of Play and Work of the Kindergarten

Bertha Payne

I. Fundamental Idea of the Kindergarten.—1. Needs of child met. 2. Methods of finding needs. (a) Observation. (b) Reminiscence. (c) Comparison with the judgments of great educators. 3. Dangers and difficulties attending each of these methods. (a) Complexity of child-nature; difficulty of discovering motive back of action. (b) Incompleteness of memories of early childhood. (c) Tendency to see in the child preconceived notions realized. 4. Method must be based on needs that are fundamental and universal in nature of child in his social and individual life. 5. Why we cannot simply adopt Froebel's methods and interpretations. Each one must be a discoverer. Froebel's genius affords greatest help in interpreting facts observed. 6. History of kindergarten as it evolved through Froebel's experience.

References: Barnard's *Child Culture*. See Froebel's Autobiographical letter. Heineman, *Froebel Letters*. Read letters to Barop and others.

II. Discussion.—1. Aim to find largest needs of children during period included between the ages of 3 and 6 years, approximately. Method: (a) Reminiscence. (b) Observation. 2. Selection of tentative list. 3. Observation in the kindergarten, with definite points in view.

References: Froebel—*Education of Man;* Section II—Man in Earliest Childhood. J. M. Baldwin.—*Child and the Race*, vol. 2, chap. on Play. G. Stanley Hall.—*Story of a Sand-Pile*. E. T. Kellogg & Co.

III. Impulses Fundamental in Different Forms of Activity.—1. In what impulses are the following activities rooted? (a) Building, (b) Singing, (c) Games, (d) "Make-believe," (e) Drawing. 2. Special observations of children in the kindergarten and elsewhere. 3. Problems: (a) To distinguish fundamental impulses and interests from accidental and capricious. (b) To foresee habits and interests evolved from normal instincts and impulses. (c) To guide impulses into such channels that they will help growth and not merely indulge fancies. (d) To provide materials and methods that will foster a steady growth in interest, knowledge, and power of expression. (e) To keep these three phases of activity in right relation to each other.

IV. Study of Impulses in Earliest Childhood and Infancy.—1. Complex activity of children of kindergarten age. Problems are simplified and clues given by taking them earlier. 2. Give instances of earliest forms in which child shows a play manifestation. 3. Describe probable mental process on mental as well as physical side in each instance. 4. Do they bring any increase of power? In what ways? 5. Do they require the co-operation of another person to complete the activity? 6. Can these manifestations be classified? If so, how? 7. What part does accident play in any of them? 8. Are they permanent or transitory? Have they any permanent elements? 9. Observation with these points in mind: Froebel's ball plays and first three baby plays in the "Mutter and Kose Lieder." "Finger Plays," Emilie Paulsson, social and ethical values indicated.

V. Interests in Earliest Forms.—1. Attention to things—movement, light, sound, colors. When and how manifested? Length of periods of attention. Is effort to attend shown? 2. Efforts to grasp, carry to mouth or throw object. To repeat noise or movement made by others. What relation have these impressions and subsequent efforts to the growth of space, time, sound, and quality perceptions? How does child obtain first notions that we attach to words, here, gone, there, near, far, high, low, up, down, big, little, hard, soft, fast, slow, etc? 3. Note especially part that child's own bodily activity plays in arriving at these apprehensions. 4. Imitations, participations of others, playthings. Froebel's idea of the function of his second gift in this relation. Contrasts give values.

References: Froebel—*Pedagogics of the Kindergarten;* chap. on Sphere and Cube. Perez—*First Three Years of Childhood.* Preyer—*Soul of the Child;* vol. on Senses and Will. Baldwin—*Development of Child and Race;* vol. I. Record of method of experimenting with his child.

VI. Rhythm.—1. Why a fundamental element? 2. Rhythm (a) in Games, (b) in Music, (c) in Construction, (d) in Nature. 3. Observation of rhythms in the kindergarten. Practice of rhythms. 4. Collect list of rhythmic games outside of the kindergarten. 5. Process of development of the rhythmic sense? 6. Rhythm in the spontaneous occupations of children. Give instances. Do you find it in children's drawings? 7. Froebel's occupations of drawing, sewing, and weaving seen in this aspect. 8. Character of the material as determining form of early plays.

VII. Imitations and "Make-Believe."—1. In play without material. (a) Does imitation assist invention? (b) Difference between imitation and invention in play. (c) Function of imagination. (d) At what age does representative play appear? (e) Ethical value. (f) To what does it lead? Dramatizations of older children. (g) Use of the term "symbolic play" discussed. (h) What is symbolized? 2. Study of some of the songs in Froebel's Mutter und Kose Lieder. 3. Imitation and invention in play with materials. (a) Describe plays that you have observed. (b) What materials used? (c) Substitution of a part for the whole. (d) Function of imagination in completing the picture and the process. (e) Educational value. (f) Income and outgo on mental side. (g) How may the teacher increase pedagogical value by taking part? (h) To what forms of activity may these plays lead? (i) Froebel's first and second gifts in this connection. Other materials. Continued observation of illustrative plays with material among the youngest children in the kindergarten.

VIII. Interest in Movement Enlarged.—1. Attraction in phenomena of change; transformations. 2. Interest in building and pulling to pieces, at first for the sake of seeing change and feeling power. 3. Accidents in relation to invented constructions that have meaning. 4. Trace steps from first activity for activity's sake to conscious activity. 5. How is idea defined after attempt to express? 6. Advantages of building gifts as materials for constructions. (a) Can be handled before child has sufficient strength and skill for real construction. (b) As power grows, complexity of parts increases. (c) Impressions afforded of elements fundamental in all imaging of form, number, size, position, without drill. 7. Free and directed play with materials. (a) Play observed; subjects chosen and further conditions for play planned by class. (b) Function of imitation, suggestion, and direction in these building plays; discussion. (c) Co-operative building; social value.

IX. Dominant Interests of the Older Children of the Kindergarten.—1. Found in (a) family life, (b) trade and industrial life, (c) nature. 2. How shall these phases of environment be correlated? 3. Continuity in consideration of subjects. 4. The effect of season upon environment; consequently upon child interest. 5. Problem of supplying natural conditions to city children. Gardens, pets, aquaria, etc.

X. Effect of Immediate Surroundings in Determining Character of Child's Images.—1. Artistic influences in home and school. Moral influences. 2. Relation of experience to expression. 3. Reaction of expression upon observation. 4. Difference in the character of images of a farm in country and city children. Other illustrations. 5. Selection of desirable experiences in country life for little children from (a) industrial, (b) æsthetic standpoints. 6. Importance of the influences that are not even consciously perceived by child. Illustrate by farm life. 7. Excursions for children under seven. What to expect from them. How to direct observation without teaching. Limitation of child's power of apprehending new conditions for given length of time. Reasons on the side of brain activity. 8. Review of the features of trade life that come closest to a child's experience. (a) In view of the simplicity of process, tools, etc. (b) In view of the meaning it has in child's own life. (c) In view of its relation to home life. 9. Pictures. (a) What subjects attract, and why? (b) Value in filling in mental pictures of things vaguely experienced. (c) Is technique equally important with content of pictures used for this purpose? What is the ideal picture for this purpose? (d) Method of preserving and using pictures of temporary value. (e) List of noted pictures that are good both as works of art and as embodying subjects of interest. (f) Stimulus to expression. (g) Formation of ideal standards. 10. Stories. (a) Correlation with other work and play. (b) Influence of story, æsthetically, morally. (c) What instinct of childhood deepens effect of story? (d) Relation of story to dramatic expression. (e) Do all stories lend themselves to such expression? (f) Relation of stories to other forms of expression, re-telling, drawing, painting, modeling. (g) Sources from which to draw stories for children under eight years of age. 11. Music; songs. (a) Music as a motor stimulus. Relation to dancing, marching, etc. (b) Dependence of child's ability to sing upon his hearing of music; growth of musical ideas. (Discussion of children's singing is taken up under another topic.)

XI. Forms of Expression.—Consideration in detail of the main forms of expression with the older kindergarten children. Games, singing, drawing, painting, modeling.

XII. Making, Constructive Work and Play.—1. Kindergarten occupations as planned by Froebel considered with modifications. 2. Work with other materials. Sewing, weaving, cardboard modeling. 3. Housekeeping.

References: Froebel—*Education of Man; Mutter und Kose Lieder; Pedagogics of the Kindergarten.* S. E. Blow—*Symbolic Play.* All published by D. Appleton & Co. Barnard —*Child Culture Papers.* J. Paul Richter.—*Levana.* Bohn's Library Series. J. M. Baldwin.—*The Child and the Race;* 2 vols. Jas. Sully.—*Studies in Childhood.* Perez—*First Three Years of Childhood.* Preyer—*The Soul of the Child.* Also *Infant Mind.*

Manual Training Department

Ira M. Carley Cora Champlin

The Manual Training Department offers two courses, one in woodwork and the other in illustrated construction.

In the course in woodwork the object will be to present conditions for obtaining the greatest amount of skill possible in a given time, and to consider the aims and principles of Manual Training.

For the acquisition of skill the course of of models illustrated herewith has been planned, with the purpose of presenting a series of exercises involving the use of all the common woodworking tools. It is so arranged as to present new problems of construction with each model. The attempt has also been made to make a progression of difficulties which shall keep pace with the increasing power of the worker.

This series of models is not intended to be a Manual Training course for children, but definite suggestions for work adapted to both the primary and grammar grades will be given. Particular emphasis will be placed upon the relation Manual Training bears to other school work.

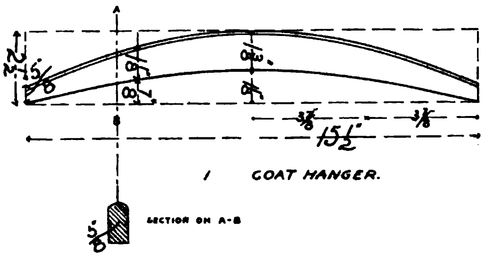
In considering the principles underlying the work, the endeavor will be made to present the history of the development of Manual Training and of its value in general education.

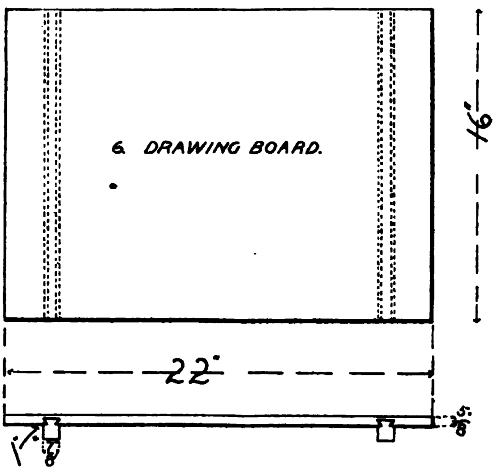
The history of the Manual Training movement is one of growth from the purely industrial and technical ideal to the educational. The power of concentrating all the energies upon the attainment of the desired end ; the training in right habits, through orderly, careful, and systematic work; the power of definite, accurate reasoning ; the cultivation of the artistic sense; and a degree of motor training which shall make of the hand an adequate instrument of expression for all ideas susceptible of manual expression—these are a few of the ideals which Manual Training endeavors to realize.

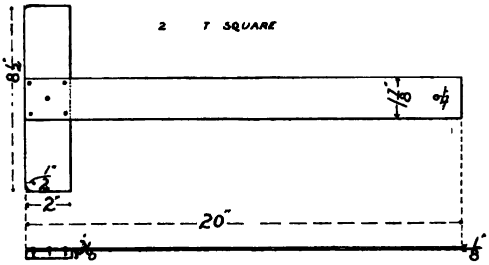
The objects of the course in constructive work are to consider the aims and value of hand work which can be carried on in the ordinary schoolroom; to determine the kinds of handwork best adapted to the various grades, taking into consideration the limitations of the schoolroom; to show how constructive work may illustrate and enhance the other subjects of study. This work is particularly valuable in connection with those studies which go to show the development of the people through their industries. In this endeavor the more simple industrial processes which touch intimately the child's own life should be taken as a point of departure.

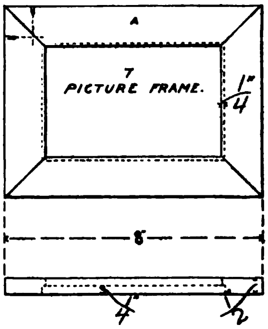
The processes of primary importance are those relating to the problems of food, clothing, and shelter. The attempt will be made to show how constructive work may be used to illustrate the way in which these problems have been solved and how the solution has been influenced by the climate, geographical nature, and resources of the particular region.

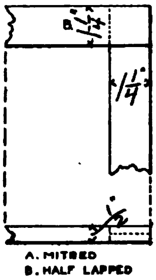
Another field in which constructive illustration may be made especially valuable is in the study of the public works of cities. The plan which will be followed in this work will be the laying out of an ideal city with reference to the location of parks, the disposition of the railroad systems, the problems of street transportation, the kind of pavements adapted to

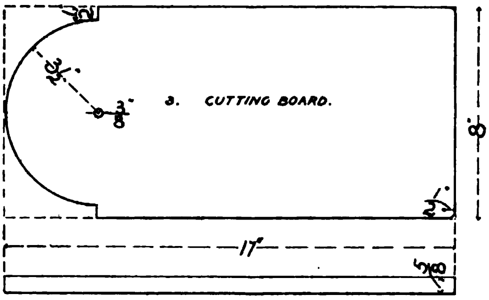

1 COAT HANGER.
SECTION ON A-B
A
B
15½"
3⅞"

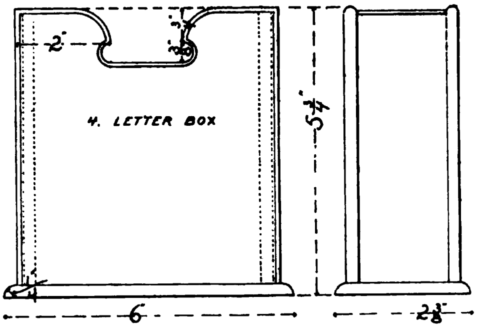

6. DRAWING BOARD.
16"
22"

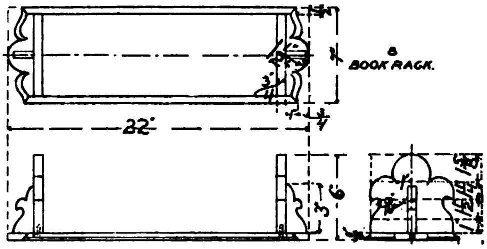

2 T SQUARE
8½"
20"
2"

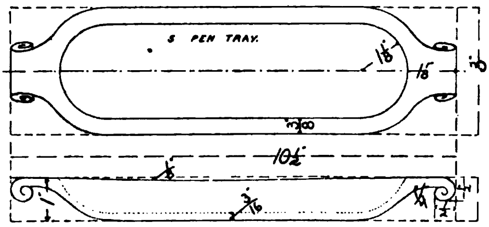

7 PICTURE FRAME.
A
6
8"
1¼"

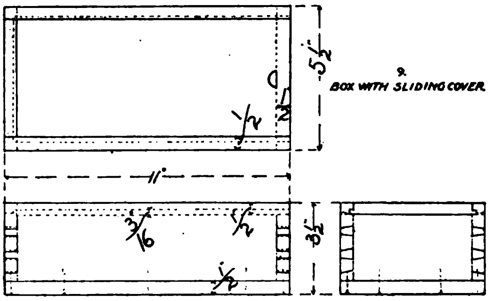

A. MITRED
B. HALF LAPPED
B
1¼"

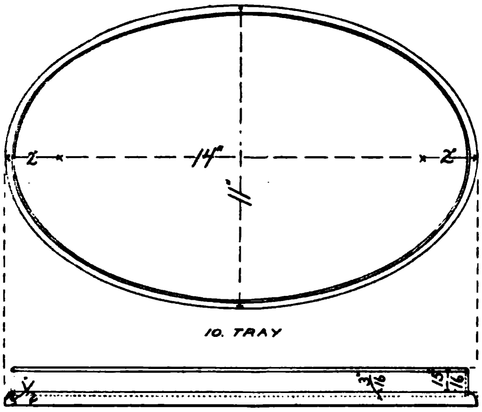

3. CUTTING BOARD.
8"
17"
3½"
⅜"


4. LETTER BOX
5¼"
6
2⅜"
2"

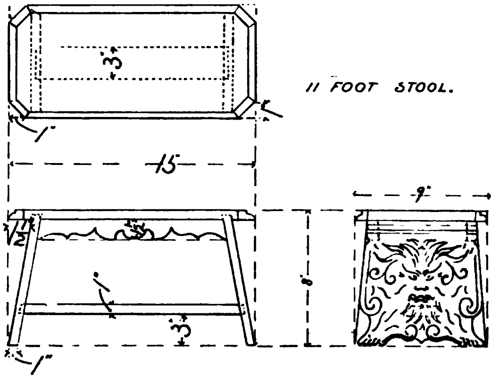

8 BOOK RACK.
22"
6
3"


5 PEN TRAY.
3"
10½"


9. BOX WITH SLIDING COVER.
5½"
11"
3½"
½"
3/16

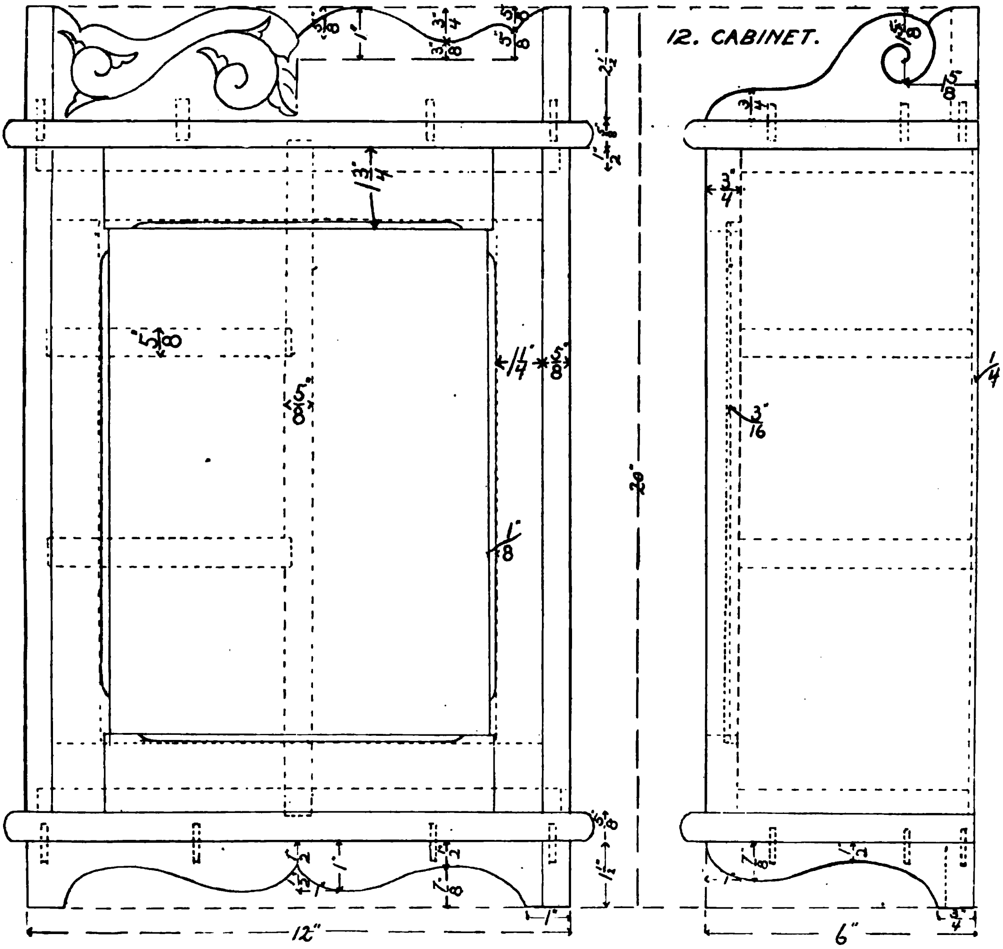


10. TRAY



11 FOOT STOOL.

12. CABINET.



various sorts of traffic, the water supply and drainage, and the methods of building construction as affected by the character of the soil, and the value of land space.

Under the course in constructive handwork is included bookbinding and making in paper and cardboard.

In the making to be done by the Summer School class, work which is similar in character is grouped together, not with the idea of laying down a course, but for convenience and economy of time in handling materials.

The Syllabus of the Course in Woodwork

I. The history of the Manual Training movement.

1. The development from the technical and industrial to the educational ideas.

II. The aims of Manual Training as a factor in general education.

1. Development of motor ability. (a) The power of accurate co-ordination in terms of mental development. (b) The importance of the hand as an organ of the mind.

2. Effect upon the character of the child. (a) The growth of will power through voluntary activity. (b) Self-reliance, springing from consciousness of ability to do. (c) Concentration, attention, honesty of effort demanded.

3. The necessity for clearness and accuracy when the thought is to be expressed by doing.

4. Reasoning and judgment necessary in selecting and adapting means to end.

5. Opportunity given by Manual Training for the child to direct his efforts toward concrete ends which intimately concern his own life.

6. Training of the artistic sense. (a) Appreciation of form, symmetry, proportion. (b) Adaptation of design to function. (c) The principles of Manual Training.

The Course in Construction Work

The fundamental basis of the work is found in the deep-seated instinct for creative effort inherent in the nature of every child. Recognizing the force of this instinct, Manual Training seeks to direct the energies of the child along right lines by affording him opportunity to put his creative effort into the doing of things which he feels to be of value and truly worth while.

The problem which will be given special prominence in this course of study is how to make the work a more organic part, both of the child's school and home life. To accomplish this means to give opportunity for constructive expression (wherever it is the most adequate form of expression), in the form most suited to the age and experience of the child; to give scope to his inventive and constructive faculties in the making of apparatus for use in other lines of work; to give him the opportunity of helping to beautify his school surroundings; to respect his initiative in regard to what he shall make for his home.

A second problem of importance will be that of arranging the exercises in woodwork so that an orderly progression of resistances shall be offered, demanding sustained directed effort, and leading to a conscious increase of power on the part of the worker.

1. Effort to find a working basis in Manual Training. (a) Course of technical exercises. (b) Course of useful models. (c) Illustration of these courses by various systems of Manual Training.

2. The real needs of the child, either in school or home, and the inter-relation of handwork and other school occupations as a basis. (a) The problem of so arranging work, upon this basis, that increasing motor ability shall result. (b) Extent to which the child's initiative shall be followed in selecting things to be made.

3. The proper time in the child's life for most effective hand-training. (a) Period of greatest growth of motor centers.

4. The kinds of movements which make for best motor training.

5. Degree of skill and accuracy which should be demanded. (a) Basis for criticism of work.

I. The use of numbers and geometry in Manual Training

1. Demand for the use of the fundamental operations in number at every step in construction.

2. The ability to estimate magnitudes through constant measuring.

3. The demand for simple geometrical constructions.

II. The use of drawing in Manual Training

1. Freehand sketches.

2. The theory and practice of orthographic projection, and its application to working drawings.

3. Isometric projection. (a) Principles of making isometric projections. (b) Where they are most advantageously used.

III. Study of construction and designing in woodwork

1. The limitations resulting from structure.

2. The methods of construction best adapted to various purposes.

3. Beauty due largely to correct proportion and construction.

4. Simplicity of design demanded by the material.

5. Kinds of wood best suited to various purposes.

IV. Ornament in Manual Training

1. Use of ornament. (a) To emphasize the function of the object. (b) Over-decoration and meaningless decoration to be avoided.

2. Practice in decorative designing, in wood carving, and pyrography.

Syllabus of Course in Constructive Work

I. The aim and value of the work

1. Its appeal to the creative instinct of the children.

2. Value in relation to other studies. (a) Strength of images gained through contact and struggle with material. (b) The advantages, and limitations as a mode of expression. (c) The kinds of images best expressed by its means. (d) Age of children for whom handwork is most valuable as a mode of expression. (e) How the child uses number and simple geometry in construction as a means of reaching a desired end.

3. Training in attention, concentration, and in correct habits of work.

II. The constructive work done by the class will be along the following lines:

1. Cardboard and paper construction. This will include the making of various articles suitable for use in the schoolroom, such as boxes for different purposes, covers for written work, portfolios, books, bookbinding and repairing.

2. Constructive work illustrating the development of the simpler forms of industries. (a) The development of peoples as shown by their advance in the industries. (b) The industries which directly concern the production and preparation of foods.

1. Hunting implements.
2. Agricultural implements.
3. Implements for preparing grains for use.
4. Development of the art of pottery. The potter's wheel.

III. Industries connected with the making of clothing

Woven fabrics—the utilization of plant fibers and wool.

The inventions of the distaff, spinning wheel, loom.

IV. Habitations

Starting point, the construction and arrangement of the children's own houses.

1. *Primitive houses.*

Their character determined by the climate and the resources of the region and by the occupations and character of the builders.

The community houses of the Mandan, Iroquois and Pueblo Indians—Wigwams. Lake-dwellers' houses. Eskimo huts. The log houses of the early American settlers.

2. *Architecture.*

Characteristics of different types. Modes of travel and transportation by land and water.

V. Constructive study of the children's surroundings

The laying out of an ideal city; location of residence districts, manufactories, business centers, parks, boulevards; study of different forms of pavements, the adaptation of the different kinds to the amount and weight of traffic over them—their cleanliness, cost, durability; disposition of railway tracks and stations; bridges—their construction; water supply, drainage, fire protection.

Department of English Composition

Nott William Flint

The object of the course is twofold: To give a practical knowledge of English Composition, and to discover means for increasing the interest of grade teachers and pupils in this means of expression. To the first end the laws of English Composition discussed in the classroom will be applied and illustrated in the writing of weekly themes. These themes will be criticised by the instructor—the typical ones before the class—and then rewritten or revised by the students. Material gathered in other classes will be used in the construction of these themes, thus affording each student an opportunity to get his classroom work into a concise literary form.

The second object of the course—the discovery of fresh interests for teacher and pupil in composition—will be aimed at mainly in class discussions. That composition is admirably adapted for the use of teachers in enabling the child to express himself, and for pupils as a pleasant and absorbing mode of self-expression, the instructor will endeavor to show. As far as possible this latter object will be brought about together with the first. The sixth week of the course, however, will be given up entirely to the consideration of the uses of English Composition in the grade schools.

I. General. Is rhetoric an art or a science? Difference between Rhetoric and Grammar? Why learn to write? If composition is self-expression, why bind it with laws?

II. The whole composition. Construction work. Choice of subjects. (a) Range: abstract or concrete. (b) Titles. Finding material. (a) Two sources: personal experience and the experience of others. (b) Selection of material. Organization. (a) Outlines: use and necessity. (1) Introduction, (2) Body, (3) Conclusion. Laws. (a) Unity. (b) Coherence. (c) Mass.

III. The Paragraph. (a) Definition and general theory: (b) Historical account. (c) Modern treatment in English, French, and German. (d) Theory of length. Kinds of paragraphs. Laws: (a) Unity. (b) Coherence. (c) Emphasis.

IV. The Sentence. 1. (a) Definition. (b) Length of sentence; effect and variety. 2. Content of sentence. (A) Unity of thought: (a) too little; (b) too much; (c) the comma blunder. (B) Unity of form; subordination of clause ideas. 3. Coherence. (a) Logical order of phrases and clauses. (b) Nearness in thought should correspond with nearness in form. (c) Parallel constructions. (d) Reference words. 4. Mass. (a) Proportion. (b) Emphasis: Periodic structure.

V. The Word. The Canon of Good Use. 1. Usage should be: (a) Reputable, (b) National, and (c) Present. 2. Solecisms, Barbarisms, Improprieties. 3. Vocabulary.

Department of Library Work

Irene Warren

The Library Department of the Chicago Institute has been planned to meet the needs of the teacher. The large libraries in Chicago with their fine special collections open to students offer excellent opportunities for research in various lines and permit the Chicago Institute to expend its funds on those books which are peculiarly adapted to the teacher's use. The Chicago Institute library now consists of some 12,000 volumes, many maps, charts, pamphlets, and clippings. There is also a collection of 22,000 pictures, carefully chosen to illustrate the work in the school. All books and pictures have been catalogued and classified according to the most improved methods. The library will serve as a working laboratory for every department of the institute ; it will not only furnish supplementary reading for the children, but will supply illustrated bulletins for home reading, and for special day exercises. For example, at Christmas time the books, magazine articles, and pictures relating to the season will be listed upon a large placard, with attractive drawings. It is expected that these bulletins will give the children a glimpse of the endless opportunity for individual knowledge and pleasure to be found in books.

The instruction in the use of libraries and books is not a technical course in library economy ; only that phase of the subject will be presented which will help the teachers in the use of libraries and assist them in the organization and management of their own school libraries. The various records necessary will be explained, and such students as have definite library work to do in schools, and therefore wish to know more of the technical methods, will be given an opportunity for practical experience. Exhibits of books and material will be made throughout the course, and the libraries in Chicago and vicinity will be visited.

Many cities are working for a closer relation of libraries and schools. The teachers are allowed special cards to the libraries which entitle them to draw more than the regulation number of books, and are permitted free access to the stack-rooms. Special rooms have been fitted up where a teacher may take a class and have all the books on a given subject ready for her use. It has been found advantageous to have the superintendent of schools a member of the public library board. In some cities the public library will loan to every room of every school a collection of books, one for every child, to be kept a month or term as needed. The librarians visit the schools and tell the teachers and pupils of its valuable collections and invite them to use the public library freely. The librarians know the school curriculum and make out classified lists of books relative to the school studies, lists for vacation reading, anniversaries and holidays, bulletin them in the libraries and send copies to the schools. Every teacher should know how to use the library to the best advantage. The library section of the National Educational Association sent out a circular last year to libraries and schools all over the country, saying that "Normal schools and all schools having to do with the training of teachers should train their students in the use of books and libraries."

Few school libraries are able to do satisfactory work, because of lack of funds and lack of care. There will be a discussion of a plan for making the public library a part of the public educational system of a city. The furnishing of reading material for the schools would then be systematically divided between the board of education and the public library board. The school would furnish the necessary reference books and sets of supplementary readers. The public library would make every school a delivery station, furnishing a small collection of books on such subjects as would correlate with the school work, together with a certain amount of fiction.

The following is an outline of the course :

1. **Relation of Libraries and Schools.**--Laws regarding the establishment and main-

tenance of public libraries and public school libraries. The public library as a part of the educational system. Instruction in the use of books and libraries. Constructive work illustrating the making of a book. Courses given in colleges, normal schools, and public libraries.

2. **Children's Books and Libraries.**—Children's books and periodicals. Illustrations of children's books. Children's reading-rooms; their aim, character of books and periodicals, the attendants, reading lists, furnishings. Maxon bookmark. Library league. Bulletins for libraries and schoolrooms. Home libraries.

3. **Organization and Administration.**—Ordering and buying. Accessioning. Shelf-listing. Charging systems. Classification; based on the Dewey Decimal Classification. Modifications of the system in this library explained. Cataloguing; the cataloguing will be taught according to the New York State Library School Rules adapted to a school library.

4. **Bibliography and Reference Work.**—Comparative value of dictionaries, indexes, cyclopædias, and handbooks. Trade bibliography and bibliography of special subjects. Book reviews and magazines.

5. **Pictures, Posters, Maps and Charts.**—Collecting, mounting, arrangement, and use. Exhibits. Care and preservation. Note-taking and library devices.

6. **Work of Library Schools and Associations.**—American library associations. Library section of the National Educational Association. State library associations. Library sections of state teachers' associations. City library clubs. Traveling libraries; work done in New York and Wisconsin. State library commissions. Farmers' reading courses. Instruction in library economy; University of Illinois, New York State Library, Pratt Institute, Drexel Institute, summer courses at University of Wisconsin and Amherst College, apprenticeship in public libraries.

7. **History of the Making of Books.**—Manuscripts. Illuminating. Illustrating. Printing. Binding.

REFERENCES:

New York State Library School Rules for Catalogue, Accession-book and Shelf-list. Library Bureau, 1899. *Catalogue of A. L. A. Library,* 5,000 volumes for a popular library selected by the American Library Association and shown at the World's Fair. U. S. Bureau of Education, 1893. A. L. A. list of subject headings for a dictionary catalogue. Library Bureau. Library Bureau Catalogue, containing lists of library tools and fittings. Plummer. *Hints to Small Libraries.* Tuslova and Comba, New York, 1898. *Public Library Handbook* by the Denver Public Library. Carson. Harper, 1894. Leypoldt and Iles. *List of Books for Girls and Women and Their Clubs.* Library Bureau, 1895. Dana. *Library Primer.* Library Bureau, 1899. Sargent. *Reading for the Young, and Supplement.* Houghton, 1896. Hewins. *List of Books for Girls and Boys.* Library Bureau. Files of the Library Journal and Public Libraries. Various publishers' catalogues and bulletins of libraries.

Department of Music

Helen Goodrich Bertha Payne

The purpose of this course is to lead teachers to understand and produce valid musical effects without great technical proficiency. It will endeavor to make clear the relation between thought and emotion and the musical means of expression. There is a vast amount of dormant capacity among so-called unmusical people. We may look forward to beautiful and joyous self-expression in singing for practically all children as soon as the standard as to technical requirements and material is corrected by reference to their real needs, mental, moral, and physical.

The plan of this course includes much class-drill in the fundamentals of natural tone-production, and in song-singing, in parts and in unison. Exercises in speech will be given as a means of securing purity of vowel sounds, and smooth, exact consonant formation, together with exercises for control of the breath in singing. Connection between text and music will be worked out, looking toward a fuller expression of thought and emotion. Melodies will be studied as material for work in pitch, rhythm, and sight-reading. There will be suggestive talks upon the relation of singing to speech, science-work, history, and literature, geography, and physical culture; also, upon folk-songs.

The subject of choice of songs will be discussed throughout the course. The classical type, the sentimental, and the Froebelian will be discussed, and the marks of a good or bad song will be shown, with illustrations.

I. Breathing: Exercises for developing diaphragm control and strength. Exhalation on vowel sounds.

II. Speech: Exercises for evolving a singing tone from speech. Drill upon pure vowel coloring and consonants.

III. Tone Production: Poise, attack, physiological succession of the vowels in their relation to voice development. Balance between registers.

IV. Studies: Sight-reading and interval-drill by means of melodic studies developed from known songs. Scale work—major, minor, chromatic.

V. Song Study: Rhythm; attack; meaning and relation of text and tune.

VI. Historical Development: Expression of religious feeling; relation to national life, to rhythmic movement. Effect of environment upon musical expression; songs of the mountains, sailor songs, wanderer's songs, trade songs, lullabies, marching songs. Correlation of music, elocution, science, literature, and history.

LIST OF SONGS RECOMMENDED FOR STUDY.

Children's Songs, by Reinecke, Rheinberger, Schumann, Brahms, Elliott, Gilchrist, Eleanor Smith.

Folk-Songs: Collection of Irish Songs, Villiers Stanford; *Pan Pipes* (Old English); *Ausländische Liederschatz* (Peters' Edition); *Internationales Volksliederbuch*, Reimann; *Songs of Life and Nature*, Eleanor Smith; *Historical Specimens*, Vol. K, Curwen; *National Music*, Carl Engel.

NOTE. — The songs published in the July COURSE OF STUDY will be used in these classes. It is suggested that those who intend taking this course should familiarize themselves with the text of the songs.

Round Table Meetings

Held by the Heads of Departments

As announced on the program, every afternoon, from 3:30 to 4:10, will be devoted to round table meetings in which the heads of departments will discuss questions relating to their particular subjects. Col. Parker's outlines considering arithmetic as a study in measuring quantity, and Mrs. Washburne's relating the work of the home and the school belong to this course and are given below:

A Study in Measuring Quantity

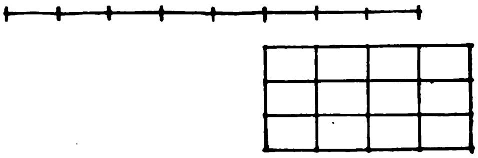
Francis W. Parker

I. The function of Arithmetic is to measure quantity.

(a) Space and magnitude are measured

1. By length or distance. Feet, yards, miles, etc.

2. By areas, length and breadth, square inches, square yards, acres, etc.



3. By volume, length, breadth, and thickness. (b) Bulk is measured by pecks, bushels, etc. (c) Gravitation or weight is measured by pounds, tons, etc. (Scales.) (d) Force is measured by horse power, pounds of steam, volts and amperes of electricity, etc. (e) Time is measured by minutes, hours, centuries, etc. (Face of clock.) (f) Equivalents in value are measured by cents, dollars, francs, marks, pounds, etc. (g) Single things like trees, houses, men, beasts, may be measured by ones or any unit of ones.

II. Division of quantity.

Operations by which number may be used to measure quantity. (These definitions and explanations are considered entirely from the standpoint of measuring quantity, and not from any definition of number itself. Abstract number is not here discussed.)

(a) A quantity may be divided into equal quantities.

Note.—The student is requested to use quantities of various kinds and divide them into equal quantities without using written figures.

1. *Division* consists in dividing a quantity into a number of equal quantities, in order to find the *number* of equal quantities in that quantity.

NOTE.—The word *separation* should not be used, as it signifies a physical act. Division is a mental operation.

2. The divisor is one of the equal quantities into which the dividend is to be divided. //// //// //// Question: How many fours of marks are there in twelve marks?

3. The quotient is the number of equal quantities into which a quantity is divided.

Dividend { .... } What is the divisor ?
.... } What is the quotient ?

NOTE.—Illustrate this by many problems in division. Conventional form 12 ÷ 4 = 3.

Question: Which is the larger *quantity*, the dividend as a quantity or the quotient as a quantity?

You have twelve apples. Divide them into three fours of apples. Which is the larger quantity, twelve apples or three fours of apples?

(b) The *partition* consists in parting or dividing a quantity into equal parts, in order to find the quantity *in one part*.

.... Partend.

1. The partend is a quantity to be divided into equal parts.

2. The divisor is the number of quantities into which the partend is to be divided.

(.... .... into thirds.)

3. The quotient is the quantity in one of the equal parts of a quantity. ....
Conventional form, ⅓ of 12 = 4, quotient.

(c) Division and partition compared:

1. In division, the dividend is the quantity to be divided *into equal parts*.

2. In partition, the partend is the quantity to be divided *into equal parts*.

3. In division, the divisor is *one of the equal quantities* into which a quantity is to be divided.

4. In partition, the divisor is the *number of equal quantities* into which a quantity is to be parted.

5. In division, the quotient (considered as a definite quantity) *is the number of equal quantities in a quantity*.

6. In partition, the quotient is *the quantity of which one equal part of the quantity divided consists*.

NOTE.—Students may understand the *abstract* definitions of number, and the fundamental operations when they study higher mathematics in the university. They do not understand them in the elementary school. Hence the confusion, haziness and mystery concerning number. All children are able to measure quantities and may fully understand the operations.

(d) Substraction is the division of a quantity into two quantities, one of which is known.

1. The minuend is a quantity to be divided into two quantities.

2. The subtrahend is the known quantity.

3. The remainder is the quantity found after division.

Conclusion: A quantity may be divided into equal quantities, equal parts, into two quantities, equal or unequal.

III. Uniting quantities.

Multiplication is the uniting of equal quantities.

1. The multiplicand is one of the equal quantities to be united.

2. The multiplier is the number of equal quantities to be united.

3. The product is the equal quantities united.

NOTE.—Division is dividing a quantity into a number of equal quantities. Multiplication is uniting a number of equal quantities.

NOTE.—"Division is dividing" is an awkward expression, but there is no word to take the place of "dividing."

(e) Addition is uniting a number of quantities, equal or unequal.

1. The addenda are the quantities to be united.

2. The sum is the quantities united.

Conclusion: Quantities may be united.

NOTE.—Children may discover all these definitions of the fundamental operations and thoroughly comprehend them. Oftentimes, adults who look through memorized definitions have difficulty in understanding that which can be understood only by studying without prejudice the function of number in measuring.

Relattons of Home and School

A Series of Round Tables for Parents

MARION FOSTER WASHBURNE

I. **Training the Body.**—Physical training; corrective gymnastics; nutrition; sanitation; ventilation; habitual attitudes; clothing; rhythm of fatigue; laws of growth. How shall the child be brought to care for his own body, without anxiety or self-consciousness?

II. **Training the Mind.**—What knowledge is worth while? Why? The doctrine of interest. The place of drill. The central subjects of study—nature-study, geography, and history -as mind-nutrition. Relations of the body and the mind; manual training; home occupations. Expression: its reaction upon thought; reading, and writing; clay modeling, painting, drawing, singing, oral reading. The effect of home training upon expression.

III. **Training the Will.**—Freedom essential to the right development of the will. Power of resistance; of initiative; of endurance. The desire to make, to express, to know, to help. The value of right motive. The use of happiness. The question of punishments and rewards. Discipline: shall subjects be studied merely as mental discipline? Order: What is true order? Respect for the rights of others.

IV. **The Whole Child.**—Under what ideal can the child develop best in all these directions? Character-building versus knowledge-getting. The demand made by community-life. The doctrine of immediate use. Altruism as an evolutionary force.

The Department of Applied Pedagogy

Flora J. Cooke

It will be observed that each department of this school presents and emphasizes the pedagogy of its own subject in the COURSE OF STUDY, and it might be inferred that a special department of applied pedagogy would be superfluous.

It finds its justification in the fact that the grades are the laboratories of the departments, wherein each head of a department tests the value of his ideas and feels the full responsibility for the results. He can judge of the value of his ideas only when he knows how the work was executed, how the children reacted to the stimuli presented, and how the plan was modified or adapted, according to the interests and experience of the children; and for this knowledge he must depend to a large extent upon the reports of the teachers who are in daily contact with the children.

Therefore, in order that each grade teacher might have the intelligent co-operation and criticism of her co-workers, the president of the school has for many years required his grade teachers to outline their work for each month. This is the work which will appear in the Chicago Institute COURSE OF STUDY during the ensuing year under the head of Applied Pedagogy.

The department proposes each month:

1. To show how the course of study for each grade is made, *i. e.*, what guides and determines the work for each particular class of children. In the outline the teacher will show whether she fully understands and appreciates the work suggested by each department of the school, and how far her children receive the benefit of the judgment and experience of the entire faculty.

2. To illustrate the method of each teacher in studying the interests, experience, and stages of development of the children under her supervision as manifested in their voluntary activities, and to show how the recognition of their fundamental activities and interests is the basis for the selection of work in every grade.

3. To present a detailed outline of work in each subject studied during the month—in geography, nature-work or science, history, literature, music, and in such fundamental social activities as sewing, cooking, gardening, and all forms of physical or manual training. The parents are requested to aid the teachers

in testing the value of the work by noting its influence upon the children in the home, on the playground, and in all forms of spontaneous action.

4. To give clearly the present working hypothesis regarding the teaching of reading, writing, mathematics, and the modes of expression, so that all may understand and discuss the work as to effectiveness or weakness from the same general point of view.

5. To state the ideal by which the work is tested—whether through it the children are growing naturally into good taste, good habits, and are improving in power, skill, and self-control.

In this number of the COURSE OF STUDY the outlines pertain entirely to the work of the Summer School.

For convenience it is presented in three sections, which will be given in detail below under the following headings:

1. *Methods of Concentration in the Primary Grades.*

This course appears upon the program as primary methods. It comes in the forenoon and is subject to same rules as the other subjects named there, as Geography, History, etc.

2. *The Model School,*

Consisting of a kindergarten and two primary grades. This section will be free to all taking the work in any four departments of the school.

3. *Round Table Section,*

Consisting of (a) one round table meeting each week for the purpose of discussing the work observed in the grades. (b) A series of six lessons upon selected topics as outlined below.

Methods of Concentration in the Primary Grades

Flora J. Cooke

This course consists of a series of practical discussions of the experiences and discoveries of the last few years in regard to children in the primary grades. There has been a continued effort in many places to discover the fundamental interests of children and the form of self-activity best suited to their development. In this course the students will be expected to compare the results of their own daily observations of the children with the conclusions reached by the child-study experts.

As preparation for these discussions, teachers will find it well to make themselves familiar with the courses of study of various noted schools, as, for example, the Horace Mann School connected with the Teachers' College and the Felix Adler Ethical Culture School, both of New York City; the University Elementary School, of Chicago; and the Chicago Normal School. The public school reports of New York, Washington, Philadelphia, Chicago, Boston, and San Francisco will also be found suggestive. This material can be obtained in most cases for the trouble of a letter to the superintendents or principals of the schools, and the cost of postage. If all those attending, and, it is hoped, taking part in the discussions, understand what forms of art and manual training are prevailing throughout the country, and what is considered essential in elementary education at present, they will not fail to have the interest necessary to any adequate consideration of the subject.

In this presentation the points for discussion have been grouped together, for convenience; but in actual practice the topics outlined as the last part of the course, such as reading, seat-work, number, etc., will receive equal attention with the central subjects of study—geography, history, nature study and literature. The teaching of these so-called "first essentials" in education will therefore be discussed from various points of view throughout the course.

Lists of Topics for Discussion

1st Topic—Discussion of the essentials of a course of study for the primary grades.

2d Topic—History—Life and interest of the children the determining guide in the work. Work of a year outlined and discussed as follows:

1. (a) Description of a play-house (16 ft. x 18 ft. x 8 ft.) which a class of seventh and eighth grade children planned and constructed upon their school grounds for the use of the younger children of the school. (b) Division of labor and the character of the work which each grade in the school contributed. (c) Probable effect upon the little children, as they entertain in it, preparing refreshments and looking after the comfort and enjoyment of their guests. (d) Problem of the heating, lighting, and ventilation of the house.

2. Description of a continued constructive play. Its value tested by its reaction upon the children. (See models made by children.) (a) Planning of the house. (b) Studying of designs for wall paper, oil-cloth, and carpets. (c) Modeling, decorating, and baking of a set of clay dishes. (d) Study of wood necessary for furnishing the rooms. (e) Inventions in cooking of food. Stories of efforts of primitive peoples in the same directions. (f) Trip to Art Gallery and selection of pictures for the house.

3. (a) Meaning of the home to children, its comforts, etc. (b) Construction of simple models by children of a house which would protect them in each season. (c) Comparison of their work with that of other peoples—Indians, Eskimos, and Pilgrims, etc. (d) Influence of environment upon the life and work of a people.

4. Stories of industry and invention. Necessity precedes invention, and these stories are given when the children have made sufficient observations to enable them to understand the invention.

5. Stories which embody ideals of courage, generosity, patience, strength, wisdom, unselfishness, kindness to animals, are selected, for the reason that the children imitate what they admire, and for the unconscious influence thus exerted upon character.

3d Topic—*Literature:* (a) The selection, adaptation and telling of stories. (b) The place of myths and fairy stories in a course of study. (c) Discussion of a suggested list of stories told in connection with nature study, history, geography, etc. (d) Basis of the selection of such stories. (e) Effect of good literature upon speech and written expression. (f) Its intellectual reaction upon observation.

4th Topic—*Domestic Science and Arts:* (a) Value of the primitive industries and arts in the early education of children. (b) The importance of simple work in school economics, sanitation, and hygiene in establishing an ideal of the primary conditions of good health in a community. (c) Cooking, sewing, and making in wood, discussed from an educational point of view. (d) The necessary correlation of such work with the central subject of study. (e) Discussion of the necessary equipment and illustrations of the kinds and cost of materials used in various schools.

5th Topic—*Nature Study:* Discussion of outlines in Nature Study, illustrated by the experiments and expression of the children in the primary grades.

1. (a) Subject-matter fitted to bring children into contact with Nature's phenomena. (b) How to lead children unconsciously to appreciate their responsibility to themselves and to the community.

2. Subject-Matter. (a) Relating to the necessities of life—food, air, water, hygienic living, etc. (b) Relating to the industrial arts of the community. (c) Relating to the æsthetic development of the children. (d) Expression; relation of reading and writing to such study. (e) Necessity of number (illustrated by work with the children).

3. Field Trips—considered as the foundation of work in the schoolroom. (a) Use of experiments. (b) Study of types of landscapes in the vicinity—swamp, lake shore, sand dunes, etc. (c) Purpose of such study.

6th Topic—*Number:* (a) Its place in the life of a child. (b) Discussion of the number required for clear imaging in nature study, geography and history. (c) The teaching of processes and arithmetical facts to little children. (d) The place of drill. (e) Outline of a year's work in number with a class of primary children.

7th Topic—*Seat Work:* (a) Essentials; kinds of work which arouse the best independent efforts of the children. (b) Standpoint of criticism. (c) Choice of material. (d) Discussion of a detailed outline of seat work for a year. (e) Its probable results in habits, taste, knowledge and skill. (f) Discussion of models made by the children.

[NOTE.—The teachers will be given an opportunity to make any or all of these articles—books, boxes, envelopes, tools and apparatus—under the direction of the Manual Training Department.]

8th Topic—*Reading:* (a) Its purpose. (b) Methods of teaching reading compared. (c) Relative value of oral and silent reading in the schoolroom; special function of each. (d) Mechanics of reading. Teaching new words, and words the meaning of which it is not easy to make clear, such as connectives, and some adjectives and pronouns; necessary repetition of words; use and place of phonics; use of the dictionary. (e) Preparation of a good reading lesson. (f) Discussion of typical reading lessons; reading for comparison of observation and experience, for information, for delight in expression. (g) The place and purpose of a reading, recitation, or lesson upon the daily school program; the final test of a good reading lesson.

9th Topic—*Expression:* (a) Value of the various modes of expression in a child's development. (b) The reason for choice—from the child's standpoint, from the adult's. (c) Relation between a child's oral and written vocabulary. (d) Economy in the teaching of language, spelling, grammar, punctuation, and capitalization. (e) Methods of teaching writing compared. (f) Comparison of the purpose and basis of this form of expression with those of drawing, painting, modeling and dramatic action. (g) Necessity and place of drill and direction in all expression work. (h) The influence upon children of songs, games, gymnastics, manual training, and dramatization of stories; effect of artistic surroundings.

10th Topic—*Final Discussion of Courses of Study for the Primary Grades:* Values compared: (a) The ideal of the teacher. (b) The governing motive of the children. (c) The self-activity exercised by the children. (d) The kind and quality of expression necessitated. (e) The habits established by the work. (f) The intrinsic value of the subject-matter. (g) The results in knowledge. (h) The results in skill. (i) The amount of drill required, etc. (j) The recognition and treatment of natural fatigue and of temporary weakness. (k) The recognition and treatment of physical, mental, and moral defects. (l) The recognition and treatment of the child's individual interests and marked peculiarities.

The Model School

Kindergarten, daily session from 8:50 to 10:30 A. M. in Kindergarten Room.

Primary Department, 1st and 4th grade class, daily session from 1:30 to 3:30 P. M. in Chapel Hall.

Ideally the work of the Model School should in no way differ from the regular school work of the year. It should be conducted by the several grade teachers, in their respective rooms, under natural conditions.

At present, however, there is but one room available for our use, and it was decided that for this year all the teachers should work together in one primary department, and make the work as suggestive as possible to the observers in the Model School.

The work is correlated around the life and interests of the children, and this necessarily brings about a correlation in subject-matter. An external correlation is not the most essential consideration, and a brief summary of the various outlines may illustrate this point.

Miss Bradley conducts the study of local conditions in nature. In her work the children are constantly brought into direct contact with typical natural areas in the environment of the school, such as swamp, forest, lake, beach and prairie, and discover the chief characteristics of the soil, minerals, plants, and animals of each section.

Miss Stilwell, in geography, plans to have the 4th grade children begin the study of local conditions. In six weeks they cannot realize the full meaning of the situation of Chicago with reference to the lake shore. They can determine, however, from actual observation, the local effects of different shore lines, and easily gather sufficient data to discover the chief physical causes which led to Chicago's settlement and growth.

Miss Mitchell continues the study of local conditions from the historical standpoint. The question of what is fundamental to a city, and the necessary qualities of a good citizen, are difficult to discover in the complexity of a great city like Chicago. She therefore proposes that the child study his present condition in the light of the life of primitive peoples. He here meets and solves simple problems and applies the knowledge thus gained to the interpretation of his own life and environment.

Miss Van Hoesen's work in mathematics is necessarily correlated with every subject in the Model School curriculum. In every case the children use the number processes only as necessary means to desired ends. They construct working plans, and make apparatus, tools, and articles needed for use in the Model School and the home. Through actual measurement they gain definite ideas of physical growth, strength, and development, which form the basis of their judgments in science, history, goegraphy, and sloyd work. Incidentally such standard units of measurement as the foot, yard, pound, quart, and gallon are functioned through use.

Drill in mathematics is understood by the child as a means of helping him to overcome obstacles between himself and a desired goal.

Two hours each week the children will work in the sloyd room under the direction of Mr. Carley or Miss Champlin. During this time they will construct in wood the apparatus necessary for immediate use in their work -such as the stretcher-frame for art work and the clinometer.

During the library periods the children will use books, pictures, and maps under the direction of Miss Warren and the teacher in the Model School.

Without further explanation it will be found that the outline of Miss Cooke in literature, and that of Miss Hollister in art, Miss Payne in music, and Miss Crawford in physical culture are based upon the same principles. They illustrate not only the individual methods of each teacher, but also show that all are dominated by the same general spirit and purpose.

Nature Study in the Model School

Harriet Towle Bradley

Special emphasis will be placed upon field work. It is desirable that the teachers observing the work be as familiar as possible with the experiences and problems of the children. For that reason the region selected for study will be that about Winnetka, described in the syllabi of the departments of Geography, Nature Study, Mathematics, and Art, as well as the immediate environment of the school.

All of the class-room work of the children will be based upon the experiences gained by them during the field trips. Indoors and in the field the aim will be to have the children give full expression to their thoughts and feelings in art, language, dramatic representation, and song. The object of the summer's work is that the children may realize and thoroughly enjoy the beauty of the summer landscape.

Field Work for Both Grades

Three phases of field work will be considered:

I. The topographic forms of the region visited, namely: 1, the upland; 2, the ravines; 3, the lake cliff; 4, the beach; 5, the old beach ridges; 6, the swamps. The most important features of this work will be: (a) Sketching with crayon and water colors. (b) Taking photographs. (c) Collection of stones found on beach and bluff, and of specimens of soil from each area. (d) A trip to the Winnetka observatory where a view showing general topographic relations can be obtained.

II. The vegetation of the region. Characteristic floras of: 1, the prairie; 2, the swamp; 3, the upland forest; 4, the ravine; 5, the lake cliff; 6, the beach ridge; 7, the present beach. The main features of the work will be: (a) Painting of the different areas to show character of vegetation. (b) Sketching trees, shrubs, or herbs which have special significance in any of the areas. (c) Taking photographs of typical tree forms, lianas, etc. (d) Collection of twigs, leaves, roots, seeds, mosses, bowlders with lichens, specimens of different woods. (e) Games and songs for the field. (f) Dramatization of stories and myths.

The children will also make one trip to the Field Columbian Museum to see the economic products of plants.

III. Animal life of the region. A study of the various animal forms found in the different areas. 1, the swamp; 2, the forest; 3, the prairie; 4, the stream; 5, the beach; 6, the lake. (a) The food of the various animals and their ways of obtaining it. (b) Their homes and means of protection. (c) Their range and means of locomotion. The main features of the work will be: (a) Record of the birds in color. (b) Imitation of bird notes. (c) Dramatization of stories and myths. (d) Collection of insects, frogs, etc., for study in the school-room whenever the proper food can be obtained.

In connection with this work the children will visit the Lincoln Park Zoölogical Gardens and the Academy of Sciences.

Suggestive Problems upon the Winnetka Area

(1) Comparative depths and widths of the ravine near mouth and source of stream. (2) Angle at which tributaries enter main stream. (3) The height of the line of winter drift-wood on the beach. (4) Proportion of the different kinds of trees found on given area, on beach, cliff, upland, ravine slope, swamp, beach ridge. (Make diagram showing same.) (5) Per cent of leaves of different trees, shrubs, and herbs which are used for food by insects; per cent used as homes. (6) Amount of soil brought up by earth worms on different areas selected. (7) Amount of water retained by various soils during a rain. Amount evaporated in a given time. Amount of organic matter in soils. Amount of sand, gravel, clay, etc. (8) Using data obtained in (7), calculate and put in tangible form the amount of organic matter, water, etc., found in the surface soil of areas studied (see 4). (9) Comparison of new growth of different plants studied. (10) Comparison of area of leaf surface relative to amount of transpiration as found by experiment.

Indoor Work

The initiative of the children, as illustrated by their interest and questions, will be recognized as the fundamental basis of all experiments, and of reading, writing, and number. On the other hand, the teacher must prepare to present the best possible conditions for self-activity, and be ready to meet and encourage the children at every step. The child may or may not follow the plan of work mapped out here. It is flexible and subject to daily change.

The first and fourth grades will necessarily meet the same general problems upon their field trips. Their work will be determined by their interest, mental power, experiences, and physical strength.

The fourth grade will study the topography of the region, construct simple maps or diagrams to show vegetation, and model in clay, to a given scale, a section of each of the typical regions—swamp, prairie, forest, stream, cliff, and beach. They will also construct a background of paper, upon which will be represented in water color the general appearance of the landscape and the types of plants, birds, and insects characteristic of each section.

The first grade children will bring their collections of soil, stones, water, plants, and animals to these models, and test their observation by attempting to distribute them properly. They will be assisted and supervised by fourth grade children.

It is not intended that these models shall be finished fac-similes of the sections represented; they are designed merely to aid the children in recognizing the fundamental relationships of the animals, plants, and soils of the various localities. In this way the children will have their data and collected material roughly classified in groups and their indoor work will consist in comparing the groups as to their chief characteristics.

In connection with all of the work experiments will be made which will help the children to answer the questions which arise in the field and class-room. Directions for such experiments will be typewritten for the use of the teachers who wish to observe the work.

Reading matter in connection with the work will be selected from literary sources. The necessary notes and records will require daily exercise in written expression. The records and paintings will be preserved in portfolios made by the children.

The probable points for observation and discussion will be.

I. The comparison of stones. Classification as to locality. Examination of stones from different areas as to size, color, form, constituents and amount of weathering. Reasons for differences. Comparison of these stones with those in common economic use.

II. The comparison of soils. Classification as to locality. Examination of constituents of each kind of soil by sifting, washing, and burning. Investigation of the properties of the various soils. Inferences as to the function of each.

III. Comparison of plants. Classification as to locality. Comparison of herbaceous plants of the different areas as to roots, stems and leaves. Recording of obvious reasons for the differences noted. Comparison of trees found in different areas. Examination of twigs to show manner and rate of growth; relation of trees to birds and insects; recording of observations in writing, drawing, and painting. Economic value of trees, wood, fruit, seeds, bark and roots.

IV. Comparison of animals. Classification as to locality. Record of insects seen. Method of identification. Insects which aid plants. Insects which injure plants. Work of animals in the different soils. Record of birds seen. Identification from description. Imitation of bird notes. Comparison of birds seen as to: (a) Manner of flight. (b) Kind of food. (c) Manner of nesting.

At the end of six weeks a stereopticon entertainment will be given by the children. In it the children of each grade will describe what they have seen, done, and made for the benefit of the others, and this entertainment will be the apparent motive for some of the close observation at the Museum and in the field. Many of the slides used will be made from pictures taken upon the trips.

Geography for the Fourth Grade, Correlated with the Study of Local Conditions

Katharine M. Stilwell

Motive—To show the relation of shore lines to the settlement and development of any region. Material—Writing, painting, drawing and modeling material, compass, clinometer, pictures, camera, stereopticon, maps, reading matter, and materials for the various experiments to be made. Method—Field work and class discussion.

I. Field Work.—1. Shore of Lake Michigan north of Chicago, sandy beach at Edgewater, cliffs at Winnetka, coastal plain at Waukegan Ill., and the sand dunes at Dune Park, Ind. 2. Points to be observed: (a) Shore currents and the processes of erosion in cliffs, terraces and cliffs; the starting of river valleys in the form of gullies. (b) The formation of beaches, spits, barriers, terraces, dunes, and deltas. 3. Children sketch the various forms observed. 4. Collect specimens of rock, sand, and pebbles. 5. Photograph salient features for further study.

II. Class Study will be continued by means of oral discussion and other forms of expression, as partially indicated below, and by the use of stereopticon views, and other pictures presented by the teacher. 1. Expression—Making clinometers and field bags. Painting or sketching the various land forms, and illustrating erosion and deposition. Drawings illustrating experiments. Modeling the land forms observed. Experiments as needed to explain points under consideration. Children will be led to devise their own experiments. Writing used continually as a means of expression of thought. Reading papers written by children, as well as articles from different sources, giving information on the topics of study. This reading will be used (a) to supplement the knowledge gained by observation, (b) as a means of acquiring information not otherwise to be gained.

2. Points to be considered: (a) Situation of Chicago with reference to the lake shore; cause of this location. (b) Topographical features of the lake shore. The character and amount of work done on the following topics will be determined by the attitude of the class toward it:

(b^1) Littoral Erosion. Agent—The wave. Process—(Class observe. Illustrate). Conditions favoring and retarding erosion. Effect of gravity. Weathering. Forms of land produced by erosion. Sea cliffs and wave-cut terraces.

(b^2) Littoral Transportation. Agent—Joint action of waves and currents. Observation as to method. Direction of wind. Shore drift or beach, and barriers; relation of the two; history of lagoons. Class will determine (through experiment) the relation of the transporting power to velocity, volume, and slope.

(b^{3}) Littoral Deposition. Material: Shore drift, detritus delivered by streams. Conditions of deposition determined by observation and experiment. Effect of fresh water, salt water, volume, and velocity. Manner of sorting and depositing. Land forms: Spit, bar, hook, wave-built terrace. Show pictures of these as formed in the Great Lakes. Use United States Engineer maps. Deltas: How made. Conditions necessary. Some important ones. Their effect. Sand Dunes: (not an essential feature, but often present.) Where formed. Process. Conditions necessary. Shape and height of dunes at Dune Park. Relation to the prevailing wind. Shape, size, and arrangement of material. Value of dunes to the coast. Migrating dunes.

(c) Bearing of these shore features on the location and development of Chicago. Other factors in the city's growth.

(d) Study of other shore lines. Their effect upon settlement, harbors, commerce, fishing, climate, vegetation, and naval power of country. Shore of New England. Shore of Virginia and South Carolina. Coast of England. Fiords of Norway. Use pictures from picture collection and stereopticon views.

READING FOR PUPILS.

Stories of Dunes in France and Holland, C. N. S. Leaflets, McIntyre; *Waters of the Ocean*, Geographical Readers, Albert; *Coast of England*, Geographical Reader, No. 2, Blackwood's; *This World of Ours*, Arnold-Forster; *Deltas*, *Coast of England*, Geographical Reader, Standard 3, Chambers; *North America*, Carpenter; *Geographical Reader*, King.

REFERENCES FOR TEACHERS.

Rocks and Rock Weathering, Merrill; *Geography of Chicago and Its Environs*, Geographical Society Bulletin, No. 1; *Common Minerals and Rocks*, Crosby; *Short History of Great Lakes*, Shaler; *Studies in Indiana Geography*, Dryer; *U. S. Geological Survey*, Fifth Annual Report, Vol. I.; *Geology of Wisconsin*, Chamberlain; *Geology of the Henry Mountains*, Gilbert; *Monographs of National Geographical Society*, *Shore Line Topography*, Gulliver; Vol. XXIV., No. 8, *Proceedings of American Academy of Arts and Sciences.*

History Lessons for Fourth Grade, Correlated with Study of Local Conditions

Clara I. Mitchell

General Subject—Building of a City.

1. Environment of our own life compared with that of a man of the Stone Age—(1) in a forest, (2) in mountainous or hilly district, (3) on a plain, (4) near a body of water.

Influence of each kind of environment in determining methods of food-getting, clothing, protection, and social life.

2. Hunter's life as satisfying in the most primitive way man's need of food and clothing; illustrated by neolithic man of western Europe. Beginnings of industrial arts brought about by the activities of hunter life. (a) Chipping of stone for weapons. (b) Sewing of skins by means of bone needle. (c) Basket-weaving. (d) Invention of pottery.

Beginnings of science discovered and applied in: (a) Use of stone ax. (b) Invention of bow and arrow. (c) Observation of plant and animal life. (d) Knowledge of meteorological conditions. (e) Use of fire and cooking. (f) Use of trees, caves, caverns, rocks, and bodies of water as affording protection for dwellings. Beginnings of religion in nature worship.

3. Pastoral life. Illustrated by early Aryan tribes of Central Europe. Dependence upon animal food leading to domestication of animals and the life of herding. Dog, ox, sheep. Necessity for pasturage leading people from mountains to grassy plains. Possession of herds the beginning of property-holding. Necessity for the protection of property. Gathering of individuals into communities for mutual protection. Communal life. Families, clans, tribes.

Beginnings of building. Rude huts for habitation. Use of upright posts as supports and slanting roof for drainage. The walled village. Community life demanding the division of labor. Need of law in regulation of community life. Idea of leadership. Choice of leaders. Patriarchal form of government.

4. Village life. Illustrated by ancient Lake Dwellers of Switzerland. Sufficient food-supply a security against enemies. Protected community life tending to develop the arts of peace. (a) Building of log huts on piles. (b) Agriculture, barley, wheat, fruit, flax. (c) Weaving. (d) Pottery.

Proximity to water leading to invention of boats, and skill in sailing. Boats and domesticated horses as opening ways of travel and bringing about contact with people. Exchange of commodities. Barter. Commerce the result of industrial productiveness and inventive skill. Importance of commerce as an agent in civilization shown by the use of metal and wool brought into the lake villages by exchange. Further division of labor demanded by metal-working, wool-culture, weaving and dyeing, and by commercial enterprise. Bronze age.

5. Early Iron Age. Illustrated by ancient Troy. Greater refinement of living as shown, in: (a) Architecture, use of pillar, art in decoration. (b) Dress. (c) Armor, weapons, and implements. (d) Music. (e) Social intercourse. Development in religion expressed by the temples, tombs, and religious observances. Simple political relations. Priam the father, king, priest. Hector the military leader.

6. A further developed city of the Iron Age. Pictures and stories of Athens at the time of Pericles. Situation of Athens—harbor, mountains, plains. Complicated political relations the result of situation, division of labor, property-holding, differences in religion, and family. Story of the life of Solon and his service to his state. Story of the life of Pericles.

Pictures of Athens showing the acropolis, parthenon, propylæa, lyceum, gymnasiums, academy, town halls, harbor and ships.

Pictures showing architecture of ancient Rome; cities and buildings of the Middle Age; Rouen, Amiens, Cologne, Venice, Paris, Berlin, London, Chicago; early Chicago; excursions to Fort Sheridan, City Hall, Art Institute, Auditorium, Lake Front, South Water street, a railroad freight yard, and a newspaper printing-room.

Discussion as to the use and beauty of these things as children observe them.

Written composition will occur at various points in the course of the lessons as a help to discussion.

Lessons will take the form of oral or written discussion, drawing, painting, modeling, or making.

The beginnings of industries will be taught by means of constructive work in building, modeling, weaving, dyeing, sewing.

Objects to be made by the children: Models of caves, huts, villages, lake dwellings, pillars and walls; woven baskets; looms; woven rugs; clay dishes; models of human types studied; costumes for these models.

Drawings and paintings will be made as records of field trips and observations.

Reference books: *Man Before Metals*, Joly; *Primitive Man*, Figuier; *The Story of Primitive Man*, Clodd; *Great Races of Mankind*, Ridpath; *Prehistoric Man and Beast*, Hutchinson; *Primitive Culture*, Tylor; *Prehistoric Times*, Lubbock; *Ilios*, Schliemann; Homer's *Iliad; History of Greece*, Curtius; *History of Greece*, Grote; *Aspasia*, Hammerton; *Plutarch's Lives; Encyclopedia Britannica.*

Mathematics

Gertrude Van Hoesen

First Grade

I. Growth.

MOTIVE: To aid the child in his endeavor to account for the changes in nature. In order to image clearly, definite measurement is necessary.

1. Measurement and comparison of heights of the children; *i. e.*, the children will use their own heights as standards of comparison in estimating the heights of objects surrounding them. They will cut strips of paper one inch wide and equal in length to their heights. They will thus acquire familiarity with the foot and inch as standards of measurement.

Questions: Will you measure just the same height a month from now? What makes you grow? What other things about you grow?

The children will discover the change in chest measurement caused by the inhalation and exhalation of breath. They will keep their first records for future reference and attempt by appropriate breathing exercises and contests to increase the capacity of the lungs. Advantage will be taken of the children's knowledge of the physical properties of air, and science work in this direction will again be emphasized.

2. Trees: How do you know that the trees grow? What caused the change in the spring? Do all trees grow equally that receive about the same amount of heat, light, and moisture and live in the same soil? How can we find out?

Examine twigs of typical trees found upon the different areas selected for study.

Have the children find this year's growth by means of: 1, color; 2, by looking back from the tip of the twig to the first set of rings.

Find last year's growth. Measure this year's growth on a definite number of twigs from each tree. Find average growth for each tree. Comparison of growth from terminal and lateral buds.

Which tree has grown the most?

Which the least?

Expression: The children will cut strips which will show the growth of from four to eight twigs from each tree considered.

NOTE.—If the children have difficulty in using the ruler, especially in the measurement of inches and parts of inches, these difficulties must be overcome before the desired images can be gained. This is the legitimate place for drill.

II. Manual Training or Making.

1. Board for painting or sketching.
2. Portfolio for the children's work.

MOTIVE: These articles are both needed by the children in the science work.

1. Paint-board. First step, a working-drawing or plan. This drawing will be made on paper, full size, to be used as a reference in the Manual Training room.

The working-drawing will consist of two rectangles: The first, 12 by 9½ inches, representing the size of the board; the second, 9½ by 1 inch, representing the upper face of one of the two strips which will be fastened to the underside of the board. The children determine the size of the board, their guide being the purpose that it will serve.

2. Portfolio in which to bind the children's work. It will consist of two pasteboard rectangles, each 11½ by 9 inches. The outer covering for the rectangles must allow for one inch to turn under on each of the four edges. The inside covering must leave a margin of a half inch around the edge. What are the dimensions of the outer covering? The inner? Holes must be punched along one of the short edges of each covered rectangle, one inch apart, having the first hole one inch from the upper edge. How many holes will there be? The rectangles may be laced together with cord which matches the outer covering. When binding the leaves, the holes must correspond along the back edge.

The working-drawing will consist of rectangles corresponding to the pasteboard foundation, the outer covering, and the inner covering.

Fourth Grade

I. Building Materials.

In the building of homes the selection of materials depends upon a knowledge of their qualities, i. e., will they serve the purpose for which they are intended? The question, therefore, is: What governs a choice of building material, ideally and practically?

1. Material used in building houses around us, such as stone, brick, and wood.

2. Sources of each.

3. Chief requisites: Beauty, strength, hardness, and durability. Test building stones, as limestone, sandstone, granite, marble, and quartzite, as well as brick for: (a) Hardness and strength. (b) Durability. Weigh specimens of each; soak in water over night. Weigh again. Soak for a week, a month. Draw conclusions. Why is limestone used so much around Chicago when our experiments prove that other building stones are to be preferred?

4. What governs our choice of wood? (a) Examine polished specimens. Which is the most beautiful? Where have you seen it used? (b) Get the experience of the children as to hardness, from their work in manual training. (c) Which is the strongest?

The tests must be made with specimens of uniform size, 14x¼x¼ inch. The weights, varying from one-fourth to ten pounds, may be bags of beans or sand, made by the children.

The test, to be of value, must be performed in a uniform way—the weights being hung exactly in the middle of the beam of wood. Draw conclusions.

Problems: If- -pounds are required to break a stick of pine 14x¼x¼ inch, how many pounds will be required to break one 14x¼x½ inch? Draw the stick. To break one 14x½x½ inch? 14x1x1 inch? How many pounds will be required to break one that is 28x¼x¼ inch?

[NOTE.—If there is doubt have the sticks ready for the children to prove their results.]

Draw the picture of a stick of oak that will require 30 pounds to break it, if it takes 15 pounds to break one 14x¼x¼ inch?

(d) Why are frame houses painted? Weigh specimens of different woods painted and unpainted. Soak in water. Compare results.

II. Manual Training.

Give the children a choice of three articles: 1. A pencil-box for use in school. 2. A match-safe for use at home. 3. A writing-pad, either for self or for a present. A working-drawing or plan must be made as a guide from which to work. The children will plan the articles, in proportion to their requirements, making a cardboard model first.

The pencil-box will probably be 9x3x2 inches. The working-drawing will consist of three rectangles: (a) 9x3 inches, to represent the top and bottom. (b) 9x2 inches, to represent the sides. (c) 2x3 inches, to represent the ends. How many square inches of wood will be needed for the top and bottom? For the sides? For the ends? The entire box? How many cubic inches will it contain? How many inches of board, 12 inches wide, will you need for the entire box when you go to the Manual Training room, if you allow 2 inches for waste between pieces?

The match-safe consists of a rectangular piece of wood, 6x8 inches, with a half-inch bevel. On the left-hand side is placed the pocket for the matches, which is composed of a semicircular wooden shelf 2 inches in diameter, and a rectangular piece of leather, decorated with pyrographic designs, made by the children. On the right-hand side, a piece of sandpaper 1½ inches by 3 inches, with clipped corners, is placed symmetrically with regard to the shelf.

The working-drawing consists of three rectangles and a semicircle, or half-ellipse, according to the ability of the children.

The first rectangle represents the board, with dotted lines showing the bevel and the definite location of the pocket and sandpaper.

The second rectangle represents the leather.

The third rectangle represents the sandpaper.

The semicircle or half-ellipse represents the shelf.

The writing-blotter consists of a thin board 12x9 inches, with triangular corners of leather, decorated with pyrographic designs, and blotters cut to fit.

Literature and Simple Entertainments by the Children

Flora J. Cooke

During two periods a week the children of each grade will entertain the children of the other grades, and once each week light refreshments will be served. Within certain limits, the children will choose the menu, prepare the food, and serve their guests according to their own plans.

The first grade entertainment, although a matter of choice with the children, will probably include action games, sense games, the guessing game in which they describe the flowers and birds seen upon their field trips, and the telling and dramatization of stories and poems.

The fourth grade will illustrate with models, drawings, pictures, and stereopticon views various subjects which they think the children of the first grade can enjoy. They will also tell and dramatize stories, and teach the little children traditional plays and games.

The teacher will endeavor to make every phase of the work educative as well as pleasant. The stories told by the teacher will in every case have significance in the immediate life and work of the chidren, and will be selected to arouse such emotions as children can express in their undirected action. They will include such myths and nature stories as may best help the children to see, from another and more beautiful point of view, the things which they have observed in nature; as, for example, in their study of trees they will be given Lowell's poem, "Rhoecus." In this they will see that the spirit of nature can only companion him who is kind and good. They will also have stories which embody ideals of courage, generosity, wisdom, and kindness to animals. These are intended both to emphasize the work in history and geography, and also to influence the daily actions of the children. *Prometheus*, *Hiawatha*, *Ulysses*, and *King Solomon and the Bees* are illustrative of this type of story. Stories of invention and industry will be told in connection with some invention for which the children feel the need. In them they may compare the results of their own crude efforts with the work of those who, having the same problem, have permanently benefited the world. They thus begin to realize something of the cost of success in any valuable undertaking. The works of the Greeks, and story of Palissey the Potter, are examples of this class of stories. The list of stories which will be used is not given here, for the reason that their choice will depend entirely upon the daily experiences and needs of the children in the Model School. At the end of the session the teachers may obtain summaries of the stories used, with notes and suggestive references.

Art Expression for Primary Grades

Antoinette Hollister

The art expression for primary grades will grow principally out of the work done in nature study. The topography of the Winnetka region is to be crudely represented in miniature by a clay model. For this work the children will be divided into groups, and each group will model in the field one of the areas, all of the groups co-operating afterward in making the model of the whole region.

Material will be brought from the field to illustrate the characteristic flora of these various areas, and careful studies will be made of them at school.

In the later work in the field, sketches will be made of trees, shrubs, or herbs whose presence in this region is significant.

Studies in detail of these plants will show their adaptation to soil and atmospheric conditions.

At the same time the children will study the animal life of this locality and the inter-relation of the plant and animal life, recording with paint or clay their observations as to how the plants are aided by the animals, how injured by them, and with what devices nature protects plants from the ravages of animals.

In order to show the manner and rate of growth of twigs and plants, they will be painted or modeled repeatedly at intervals from the beginning to the end of the school term.

Literature.--Children will be encouraged to reinforce oral expression with art expression, to illustrate stories as they tell them. They will express, also, in this way the thought acquired from the printed page.

Some of this work will be given in the form of games.

Music in the Model School

Bertha Payne

The singing in the grades will be closely correlated with the other work. The songs of nature will be chosen to give expression to thoughts aroused through the out-of-door life. For this purpose songs of water, of trees, of flowers, of insects, and of birds may be used. The songs will be selected for their musical fitness to the children's ability, as well as for the interest in the subject. They will probably be taken from the following list:

FIRST GRADE.

The Apple Tree, Ring Around a Rosy, Dancing Song, Soldiers' Song, Winds of Evening, The Squirrel, The Shell, Dancing Song, and *Water,* all in Primer, Modern Music Series, Scott, Foresman & Co.

FOURTH GRADE.

Where Go the Boats? E. Smith, Song Pictures, Clayton, Summy & Co. *Sea Horses,* and *The Brook,* Tyson-Wolff, Second Book, Modern Music Series, Scott, Foresman & Co. *Sicilian Mariners' Song, Lady-Bird, Oriole's Nest Song, Spin, Lassie, Spin, Morning Prayer,* all in First Book, Modern Music Series, Scott, Foresman & Co. *Indian Melodies,* from Baker's work on North American Indians (German).

Notation and Sight Reading.—Music notation and reading will be taken up as soon as the children can be made to feel the need for recording what they have sung. This work will not enter into the first grade.

Melodies.—The children in both classes will be encouraged to make original melodies as often as they show a spontaneous inclination toward it. Recording these melodies will furnish opportunities for the exercises in using staff-notation.

Listening to Music.—A large part of children's musical training must come through listening to the best music, well given. For this reason there will be a time set apart each week in which the children will sing for others as soon as they have something to offer, and in which others will sing to them.

Exercises.—Vocal exercises and breathing exercises will be given incidentally when they seem to be needed. Rhythmic exercises will be given in play forms to the younger children. Exercises in intervals and in rhythm will grow out of the songs, and help to form clearer ideas of pulsation and pitch.

Physical Training for Primary Grades

Caroline Crawford

I. **Measurements.** 1. Growth.—Aim: To stimulate the child's desire for an active, supple body.

2. Strength Tests.—Aim for Child: To develop the idea of the strength of the materials of the body.

Aim for Teacher: A guide to show the effect on the child of the work that is given.

II. **Practical.** 1. Exercise for position and development.

2. Games and plays.

For first and second grades, dramatization of Mother Goose; primitive folk plays.

For third and fourth grades, Greek sports and games.

3. Dancing, calisthenics and dancing games for development of rhythm and co-ordination.

Program for the Summer School Kindergarten

Anne Elizabeth Allen

In the preparation of a Kindergarten program the first consideration must be the needs of the individual child in relation to the community. Then the immediate surroundings must determine the course to be pursued in order to bring about the best conditions for work. Therefore, as the season, together with the large park and lake adjacent to our Summer School directly dictates our work, we shall spend most of our time in the open air. The schoolroom will be reserved merely as a place for assembly and organization, and for work on unpleasant days, in preparing toys for outdoor sports and giving expression with suitable materials to the ideas that have crowded upon us in our outdoor experiences.

In order to make field work really delightful, we need large materials and freedom of action, while at the same time the necessity of a law which every member of the community must obey, becomes more obvious just because of the greater liberty.

Also, with such an abundance of material, it seems necessary to select a unifying center around which to group all work—and the thought of *interdependence* as shown in the natural conditions around us will be selected.

Beginning with games chosen by the children themselves, directed and modified only in such ways as seem best, we shall add such games as will strengthen through dramatization their conception of our surroundings.

The zoölogical garden in the park will offer abundant opportunity for a close observation of the characteristics and habits of the animals exhibited there in almost a natural condition. The park with its trees, plants and flowers, and the lake with its sandy beach, will offer us an inexhaustible field of interest.

For the first two weeks we shall devote most of our time to the observation of the animals chosen by the separate groups of children, watching their daily habits, while constructing their homes of large blocks, or in the sand, and improving them as the inventive genius of individual children may dictate.

We shall study the needs of the herbivorous animals especially, noticing their movements, and through song, story, and dramatic representation emphasize their relation and value to man and their dependence upon their surroundings.

For the next two weeks our attention will gradually turn from the animals to the plants, trees, and flowers; to the life of the birds and insects, and to the planting in our own gardens, in individual boxes or pots, the seeds of common plants.

Close attention will be given to the care of these plants, and we shall watch how those we see in the park are cared for, and what they need for their nourishment, pointing out as we do so the relation and interdependence of man and the vegetable kingdom.

The beauty of the colors and their blending, as well as the form and symmetry of the parts of the flowers, will be dwelt upon in order to direct attention to the æsthetic value of them in their surroundings, and to the culpability of those who destroy or take them from their natural environment without purpose. Purposeless destruction of flowers will occur no doubt, and will best be met and corrected through stories which emphasize the usefulness of the flowers in their æsthetic relations.

The remaining two weeks will be spent at the lake shore, playing in the sand, sailing boats of our own construction, watching the work of the waves, the changes of color on the water, and investigating the value of this great body of water to the plant and animal life near it.

Thus the unifying of the whole work will come about through relating this great agent of life to the fertility of all the surrounding country.

The materials used will be:

Large blocks that the children may carry about in small wheelbarrows or in their arms, clay, water-color paints, sand, blackboards, garden tools, scissors and paper, and cord for jumping-ropes.

Games: romping, imitative, and directed games; dramatization of songs or stories; free plays with toys made by the children, rhythmic games and marching (on cool days only).

Songs appropriately chosen from song books by Eleanor Smith, Patty and Mildred Hill, Jessie Gaynor, and Mrs. Riley; Walker and Jenks, Neidlinger, etc.

Stories—From any source most useful.

Round-Table Discussions

Under the Department of Applied Pedagogy there will be two round-table periods a week.

1. For one afternoon hour each week the students will be given an opportunity of meeting the teachers of the Model School. It is desired that these meetings be as informal as possible, as their sole purpose is to answer questions and explain the work observed.

This period will be free to all students interested in the Model School.

2. During the other round-table period various teachers, in separate classes, will present each a series of six lessons upon a given subject, as outlined below.

All students taking four courses will be admitted to any one of these classes, but they are requested to attend regularly the class first selected, the lessons being so related that each one is dependent upon the others of the series.

Series of Six Lessons upon Order and Management

Katharine Stilwell

THESIS.—The teacher's ideal of order is limited by his ideal of education. As the old ideals of education are modified, different standards of order and different methods of school management must prevail.

I. **What is Education? What is Order?** Relation of order to the ideal of education as illustrated by various schools. 1. Hyde Park High School. 2. John Crerar School. 3. University Elementary School, etc.

II. **Self-Government.**—Is it possible? Relation of privilege to responsibility. Liberty vs. license. Rules. What and who shall make them. Rewards and punishments. The motive of the pupil. The teacher's function.

III. **Order as Related to:**—1. Observation. 2. Comparison. 3. Reflection. 4. Action.

IV. **Relation of Order to the Various Subjects of Study:**

1. Nature study and geography. (a) Field work. Preparation. Order in the field. Use of material collected. Expression. (b) Laboratory. Grouping for work. Directions for work. Amount of noise. Care of laboratory.

2. History and civics. What the government of nations may illustrate. Civics used as an aid to self-government. The industrial life of the community and its relation to the order of the schoolroom. Excursions. How to conduct them.

3. Literature and reading. What determines the selection? Effect of dramatic reading. (a) Upon the emotions. (b) Upon orderly expression of the emotions. (c) Upon thinking. (d) Upon doing.

4. Power of music. (a) Brings about harmonious emotion and actions. (b) Selection of songs in their relation to thought. Relation to subjects of study.

5. Expression. Necessity for its use. Kinds. Acquirement of skill. Preparation and care of material used. Order of conducting such exercises.

6. Gymnastics. In relation to order. Military discipline. Effect of co-ordination upon children.

V. The Daily Program.—Proportion of time allotted to the different subjects of study. The difference between a flexible program and a fixed one. Grouping of pupils. Basis of promotions.

VI. Responsibility.—Each for all and all for each. Care of personal and public property. Housekeeping. Hygienic and æsthetic condition of school premises and neighborhood.

VII. Relation of the School to the Community.—Parents' receptions. Children's parties. School entertainments, clubs, etc. The teacher as a citizen of the community.

Series of Six Lessons on the Study of Textile Fabrics

Clara I. Mitchell

With Notes and References for Teachers

I. Study of Samples of Textile Fabrics.—Classification with regard to use; carpets, upholstery, overcoatings, cloakings, men's suitings, women's dress material, cotton fabrics, narrow webs, gauzes, plain lines fabric, household linens, silks, velvets, and laces. Fitness for use dependent upon kind and quality of material, manufacture, weight, warmth, absorptive power, design, color, and cost.

Tests for Textile Fabrics.—Ignition: Boiling with caustic soda. Boiling with mercurous nitrate. Boiling with nitric acid. Immersing in mixture of sulphuric and nitric acid, then washing. Moistening with stannous chloride solution, drying and heating. Treating with solution of sodium plumbite.

Tests for Differences between Cotton and Linen.—Immersing in concentrated sulphuric acid for two minutes, washing with water and ammonium hydrate and drying. Treating with alcoholic solution of madder. Treating with alcoholic solution of madder cochineal. Immersion in olive oil. Treating with alcoholic solution of rosolic acid, then with concentrated ammonium hydrate. Iodine and sulphuric acid solution. Ammoniacal solution of copper salts.

II. Qualities to be Considered.—Length of fiber, adaptation to spinning and weaving, strength, evenness, soundness, durability, fineness, springiness, luster, susceptibility to dyes.

III. Qualities Dependent upon Condition of Culture.—Study of soil, climate, care, and industrial conditions suited to the highest culture of (1) wool, (2) silk, (3) linen, (4) cotton, (5) hemp, (6) jute, (7) ramie.

Areas of production of each. Markets. Centers of manufacture. Transportation. Indoor culture of flax and cotton plant. Raising silkworms for study. Excursions to sheep farms. Pictures of sheep ranches; shearing. Flax and cotton growing. Silk culture. Hemp, jute, and ramie culture.

IV. Manufacture. All textile fabrics made by the interlacing of threads. Simplest process probably. Basket weaving as invented by primitive man. Discoveries growing out of necessity and accident. Probable steps to be followed out by children; mat weaving of rushes and twigs; beating of bast fibers for clothing; use of flax plant; discovery of fiber; making thread of fiber; thread of wool; invention of primitive spindle and distaff; use of frames for holding warp; modification of needle into shuttle; use of comb; invention of harness or heddles; gradual perfection of loom. Perfection of spinning machinery from spindle and distaff, hand cards and wheels to complicated carding and spinning machinery. Excursions to mills and factories. Pictures. Collections of fibers, process cases. Models of machinery invented by children or imitated by them.

V. Present Process of Manufacture Compared with Primitive Beginnings and Intermediate Steps.--Wool: Sorting, scouring, bleaching, teazing, burring, mixing, oiling, carding (in case of worsted), spinning, dyeing, weaving, finishing. Silk: Reeling, twisting, discharging, weaving, bleaching, dyeing of standard cocoons; spinning of inferior cocoons into "spun silk." Cotton: Ginning, baling, picking, lapping, carding, spinning, dyeing, weaving, boiling out, bleaching. Linen: Retting, drying, grassing, bleaching, breaking, scutching, scraping, spinning, dyeing, weaving. History—Textile skill and knowledge of neolithic man. Lake dwellers, North American Indians, primitive races of Africa and Polynesia of the present time. Ancient Egypt, Greece, Peru, Mexico, India, Persia and China. Mediæval tapestries. Gobelin tapestries. Modern textile fabrics characteristic of England, Scotland, Ireland, France, United States, and the Oriental countries. Visits to shops, museums, libraries, Art Institute.

VI. Weight. Study of Yarns.—Examinations of single count yarns, two-ply and three-ply. Sense tests in judgment of counts. Adaptation of different counts to different uses. Dyeing of yarns for use in weaving. Natural dyes; turmeric, orchil, cudbear, indigo, fustic, redwoods, cochineal, madder. Extract obtained by boiling for one hour in water. Formula for use of turmeric 4% (of weight of yarn) sulphuric acid and 20% Glaubers salts dissolved in water at 160° F.; skein to be entered and worked in this bath at same temperature for 45 minutes. Washed after dyeing. Cochineal dissolved in water and used directly. Cudbear, orchil, indigo extract, prepared as above; skein to be boiled for 20 minutes, then washed. Redwoods and madder dissolved with 3% of bichromate of potash; cooled to 160° F., 1½% of cream of tartar added; skein entered and boiling point reached in 30 minutes; boiled for one hour.

Wool Dyes.—Prepared as above in case of turmeric. Skeins entered at 160° F., boiling point reached in 20 minutes. Boiled from 20 to 30 minutes.

Names of dyes and manufacturers:

Pierie acid, yellow, Pickhardt & Kuttroff.
Fast yellow, Pickhardt & Kuttroff.
Orange, Nos. 1, 2 and 3, Skyes & Street.
Milling red, Matheson.
Fast red, Sykes & Street.
Crystal 6 R., scarlet, Matheson.
Victoria blue, Pickhardt & Kuttroff.
Acid violet, blue, Pickhardt & Kuttroff.
Formyl violet, blue, Matheson.
Malachite green, Sykes & Street.
Fast acid, green, Elberfeldt.
Naphthol black, Matheson.
Acid magenta, purple, Read, Holiday & Co.

Wool to be thoroughly wet before dyeing.

Cotton Dyes.—Bath prepared with 15% common salt and from 2 to 4% dye.

Benzo purpurin 4 B., red, Elberfeldt.
Diamine scarlet 3 B., red, Matheson.
Theo flavin S., yellow, Pickhardt & Kuttroff.
Diamine yellow, Matheson.
Mikado orange, Muhlheim.
Benzo azurin, blue, Elberfeldt.
Diamine violet N., Matheson.
Mikado brown G., Muhlheim.
Diamine bronze, brown, Matheson.
Union black, Matheson.
Diamine green, Matheson.
Berlin aniline dyes for both wool and cotton.

Cotton to be thoroughly wet before dyeing and kept wet till entered into bath. Wetting accomplished by boiling in water, or water and small quantity of caustic soda. Better method: Soak for five minutes in hot water to which has been added fankhausine (1c.c. to every pint of water used.)

NOTE.—Fankhausine to be bought of Nashoba Mfg. Co., Boston.

Mixed, compounded, and lightly dyed colors best for use.

Proposed course in sewing: To embrace only such articles as are needed and used in the children's daily life.

Dust cloths, wash cloths, towels, caps, aprons, napkins, desk covers, sewing bags, book bags, book covers, iron holders, stove holders, hot-dish holders, oversleeves, pen wipers, curtains, sheets and pillow cases for the playhouse. Clothing for dolls for use in games, plays, or history lesson. Garments for children.

Teaching of technique of sewing as work demands it. Stitches, use of utensils and proper habits taught only as need arises, not as isolated drill. All patterns to be discussed, planned, and drawn. Steps to be observed and taught as needed: Proper position of body in sewing, correct holding and using of

tools, basting, hemming, plain machine stitching, over-casting, over-seaming, running, back-stitching, half back-stitching, plain fell, French fell, gathering, darning, patching, button-hole making, gusset-making, feather-stitch, hem-stitch.

Embroidery stitches: Cross stitch, split stitch, outline stitch, button-hole stitch, rope-stitch, French knot, chain stitch, herring-bone stitch, satin stitch, darning, embroidery stitch, couching.

BOOKS FOR REFERENCE:

Textiles: *Textile Chemistry*, J. Merritt Matthews, Philadelphia Textile School; *Woolen and Worsted Cloth Manufacture*, Roberts Beaumont; *Mechanism of Weaving*, T. W. Fox; *Elements of Cotton Spinning*, Morris & Wilkinson; *Cotton Weaving*, Richard Marsden; *Weaving*, Posselt; *Cotton Spinning*, Nasmith; *Cotton Spinning*, Taggart; *Cotton Spinning*, Brooks; United States Government Bulletin, No. 33, *The Cotton Plant;* United States Government Reports on *Useful Fibres; Flax*, Peter Sharpe; *Silk*, Jonathan Ruegg; *Instruction Book in the Art of Silk Culture*, Women's Silk Culture Association of United States; *Silk and Silk Dyeing*, Hurst; *Structure of Wool Fibre*, Bowman; *Embroidery*, N. G. Paulson Townsend; *Textile Dyeing*, Berlin Aniline Works, Philadelphia; *The Textile Industries*, William R. Bagnall; *Dyeing of Textile Fabrics*, Hummell.

Reports of United States commissioners to the Paris Exposition, 1878, Vols. I. and III.; Smithsonian Report, No. 6; *Oriental Carpets*, Royal Museum, Austria.

History: *Primitive Culture*, Tylor; *Early History of Man*, Tylor; *Man before Metals*, Joly; *Great Paces of Mankind*, *Woman's Share in Primitive Culture*, C. T. Mason; *Lake Dwellings of Switzerland and Other Parts of Europe*, Keeler; Encyclopedia Britannica, Textiles, Tapestry, Weaving Rugs.

NOTE.—The syllabus of Miss Mitchell's work in color and design in Textile Fabrics will be found under the Department of Art.

Kindergarten Round Tables

Anne E. Allen

These round tables will be divided into two sections, one for the discussion of the work with the children as observed in the morning kindergarten; the other for the playing of games in order to discuss, if possible, the best plays for little children. Under the first section, such headings as the following may be suggestive in leading to the most helpful discussion:

1. Social value of such plays and games as have been observed.
2. Whether value is direct or indirect; vital or otherwise.
3. Effect upon character of such work.
4. Has it an end worth striving for?
5. Free plays vs. prescribed plays.
6. Disciplinary value of games.
7. Question reasons for order of occupations, form of presentation, and educative value.
8. Shall we follow the interests of children, and, if so, how far? Should we ever follow their whims?
9. Shall we study the development of the children themselves or the logical sequence in presentation of the materials used?
10. Question program as a whole.

In the second section games will be played and criticised from the standpoint of their pedagogical usefulness:

a. Romping games. *b*. Unrelated kindergarten circle games. *c*. Sense games. *d*. Pantomime. *e*. Gymnastic games and rhythmic movements. *f*. Games involving dramatic expression.

Classes in French and German

Classes in French and German will be organized if there is sufficient demand. Classes in beginning and advanced German will be conducted by Dr. Seigfried Benignus, head of the Department of German in the Chicago Institute, and the classes in French by M. Ingres, of the University of Chicago.

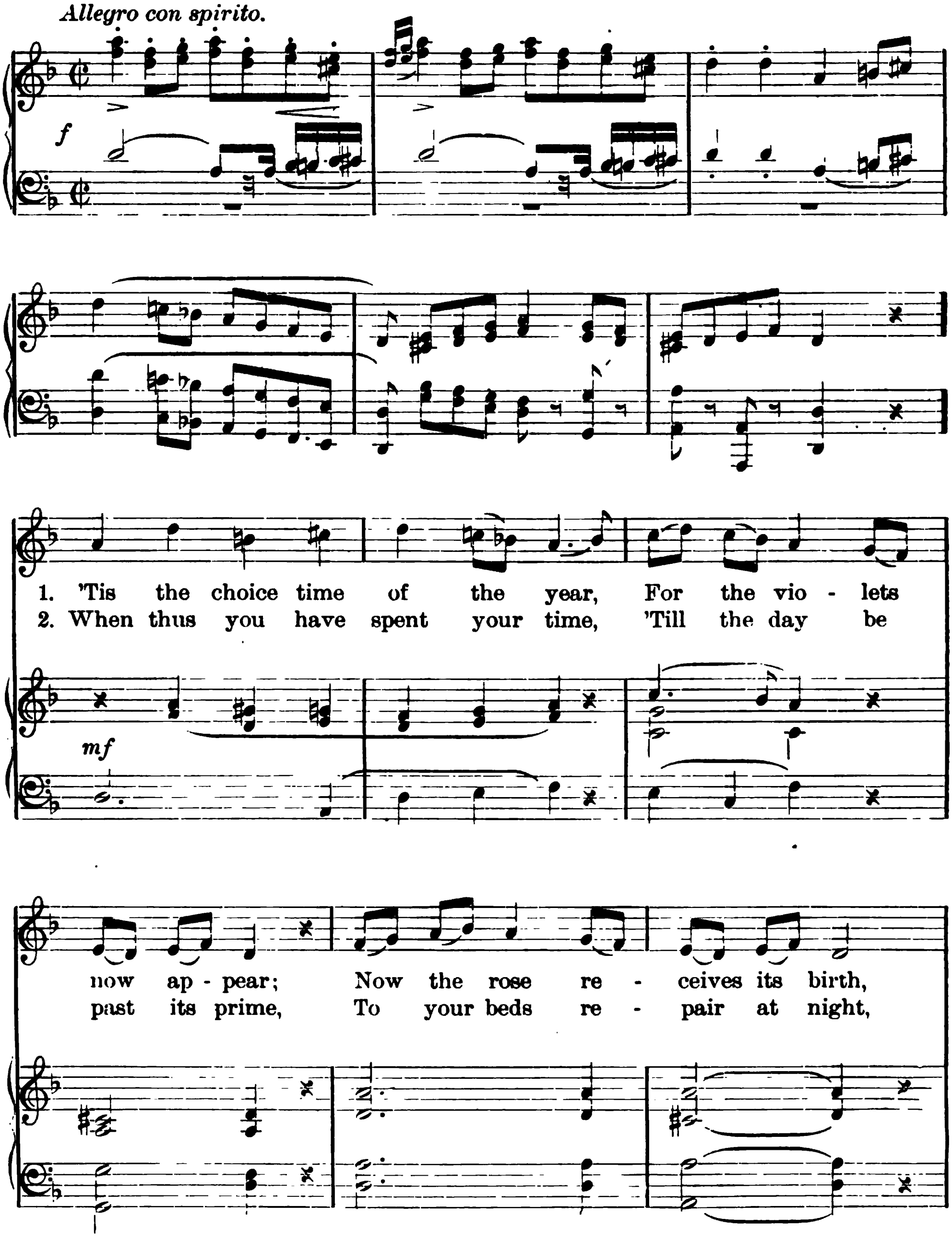
French. Two courses are offered.

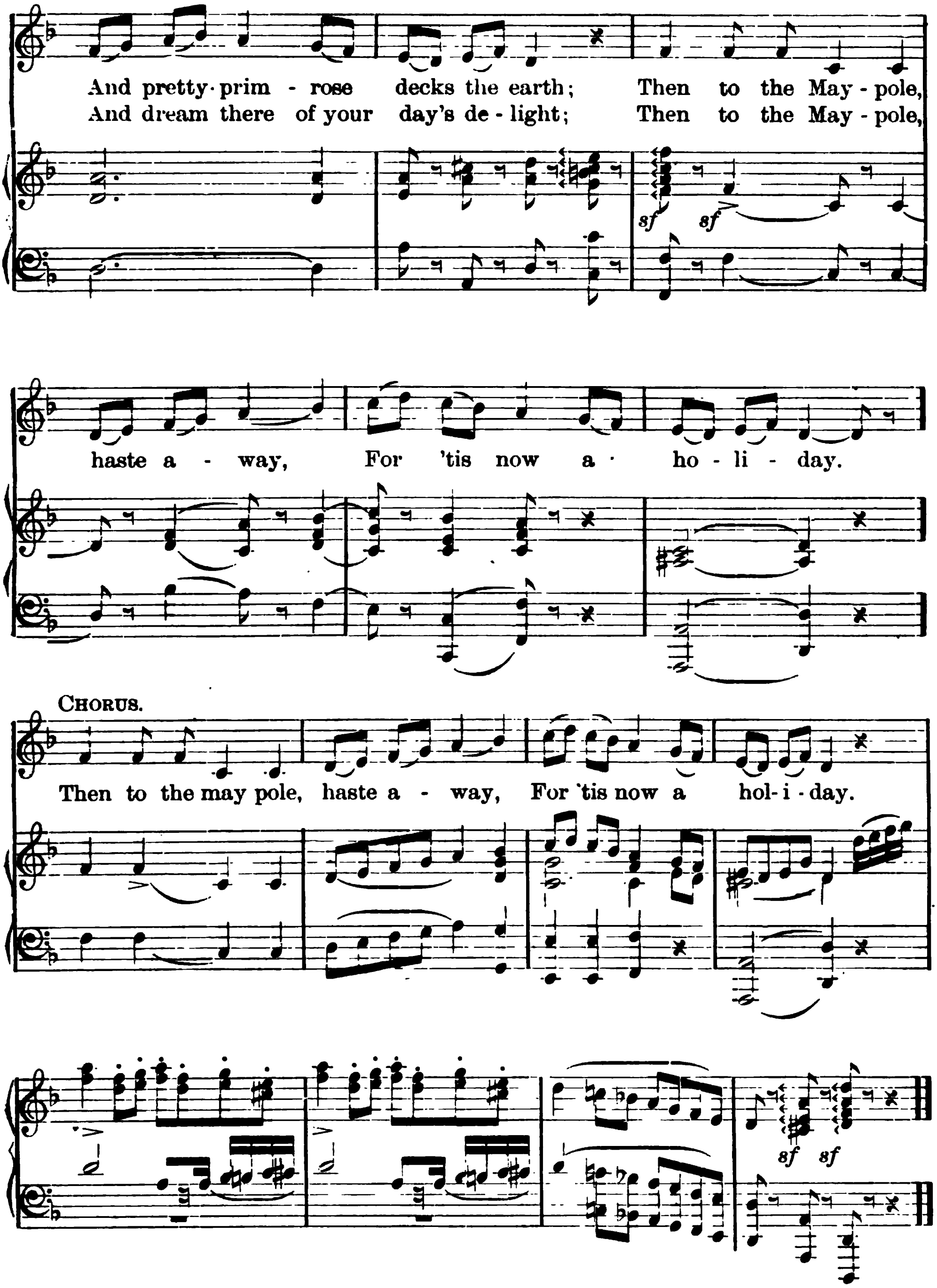
I. **The Elementary Course,** for students with little or no previous training, will be conducted exclusively in French, with special attention to the spoken language. As the student progresses the elements of grammar will be taught, and written exercises will be given regularly. It is expected that at the end of this course the student will be able to understand and use ordinary spoken French and to write the language fairly well.

II. **The Advanced Course,** for students who have had at least one year's training and are able to read and understand easy French, is also conducted in French according to the Socratic method. Difficult points of grammar will be studied incidentally. The student will be made acquainted with as many authors and their works as possible. In the written exercises special attention will be given to style, and a certain amount of home reading will be expected.

TO THE MAYPOLE AWAY.

(MORRIS DANCE.)


Allegro con spirito.
f
mf
1. 'Tis the choice time of the year, For the vio - lets now ap - pear; Now the rose re - ceives its birth,
2. When thus you have spent your time, 'Till the day be past its prime, To your beds re - pair at night,

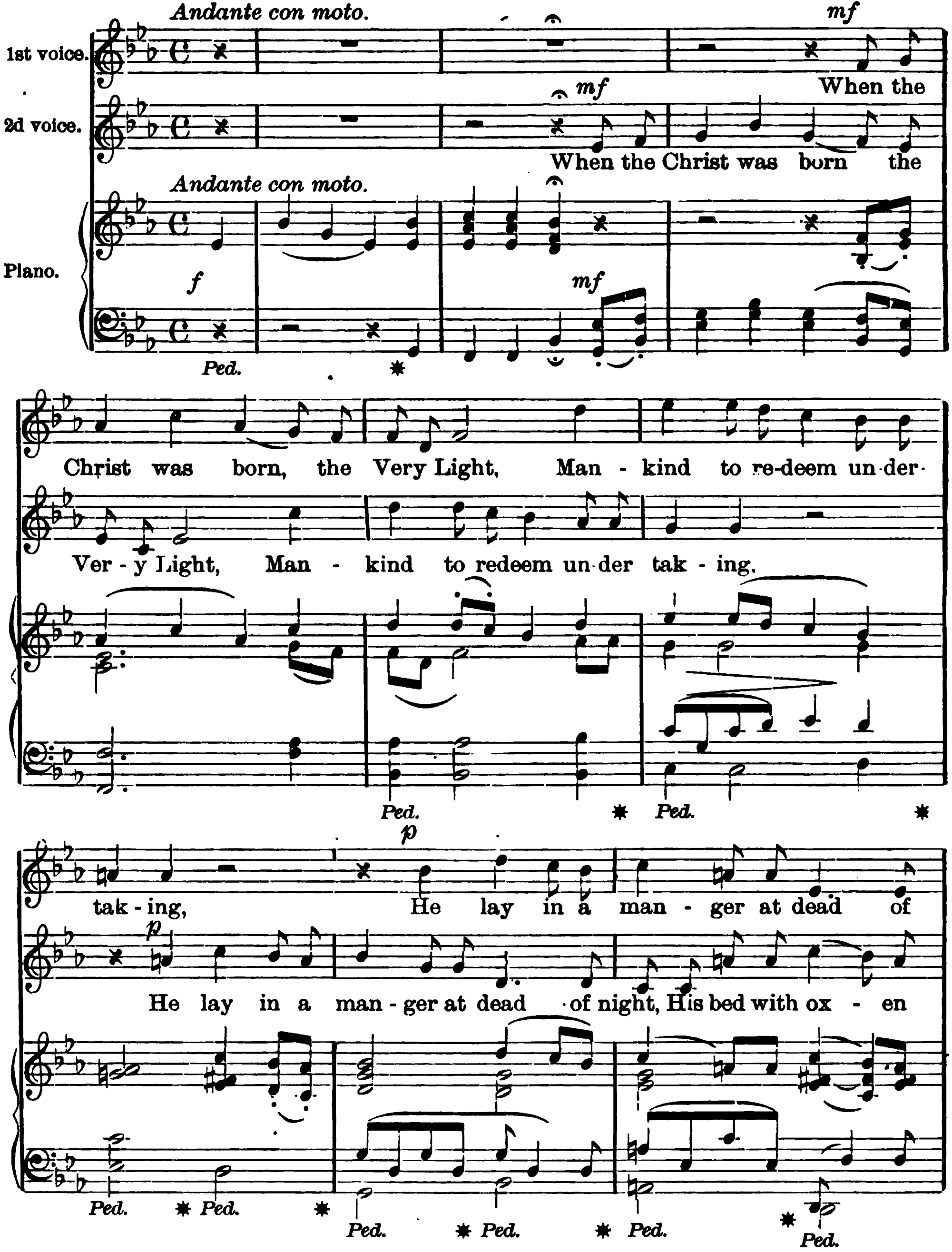

And pretty-prim - rose decks the earth; Then to the May - pole,
And dream there of your day's de - light; Then to the May - pole,
sf sf
haste a - way, For 'tis now a · ho - li - day.
CHORUS.
Then to the may pole, haste a - way, For 'tis now a hol- i - day.
sf sf

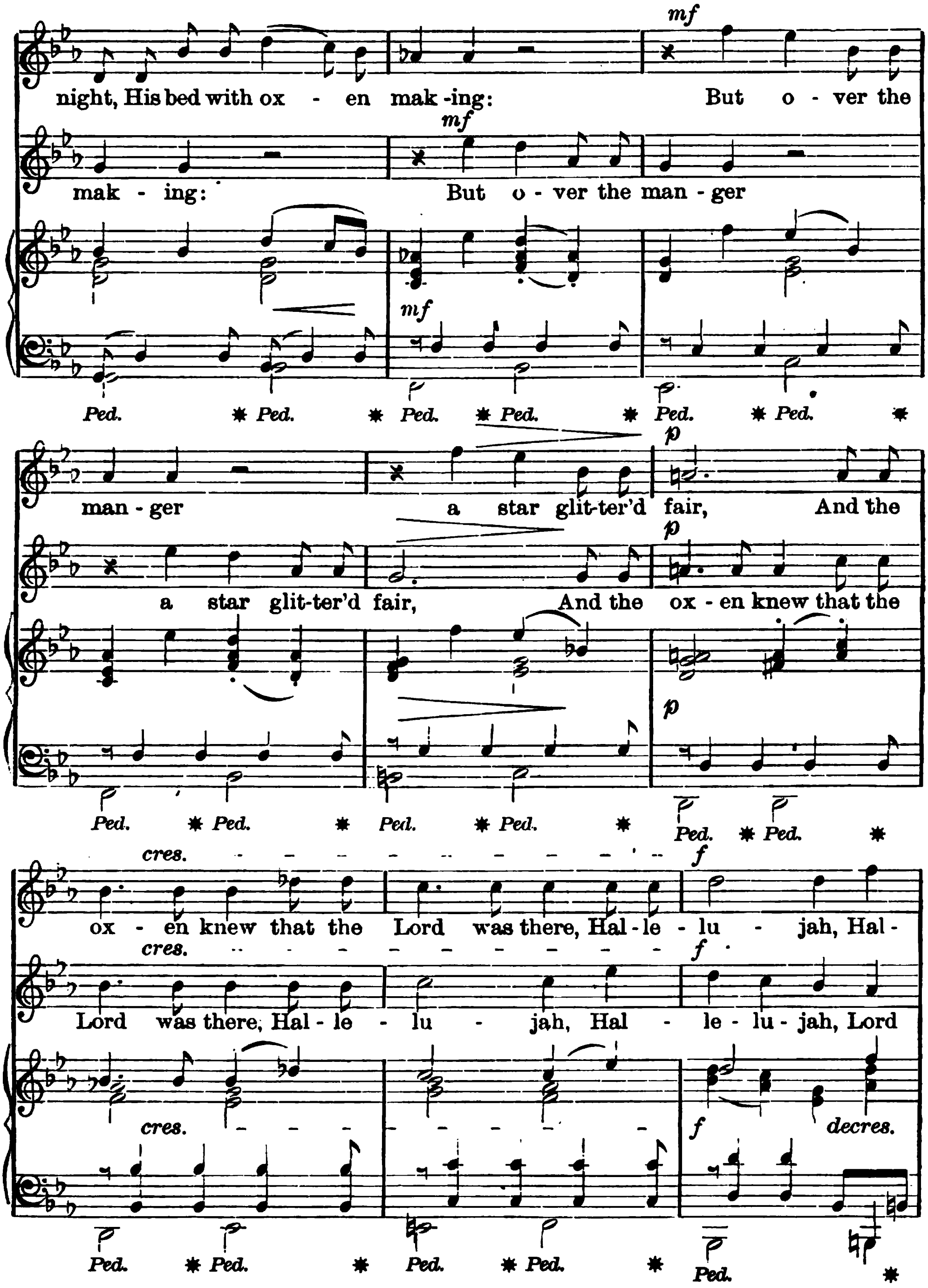
A CHRISTMAS CAROL

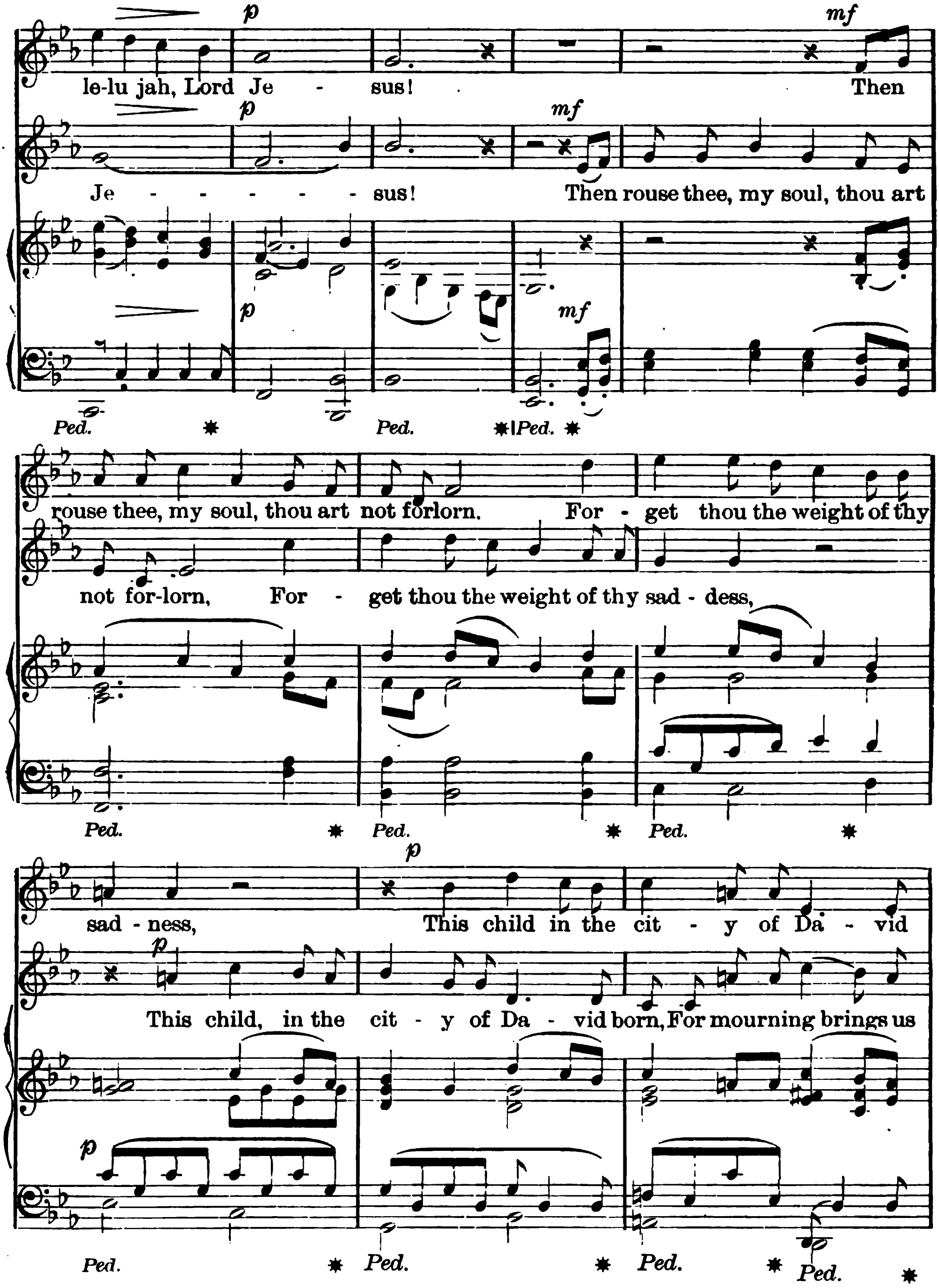
(CANON IN THE SECOND ABOVE)

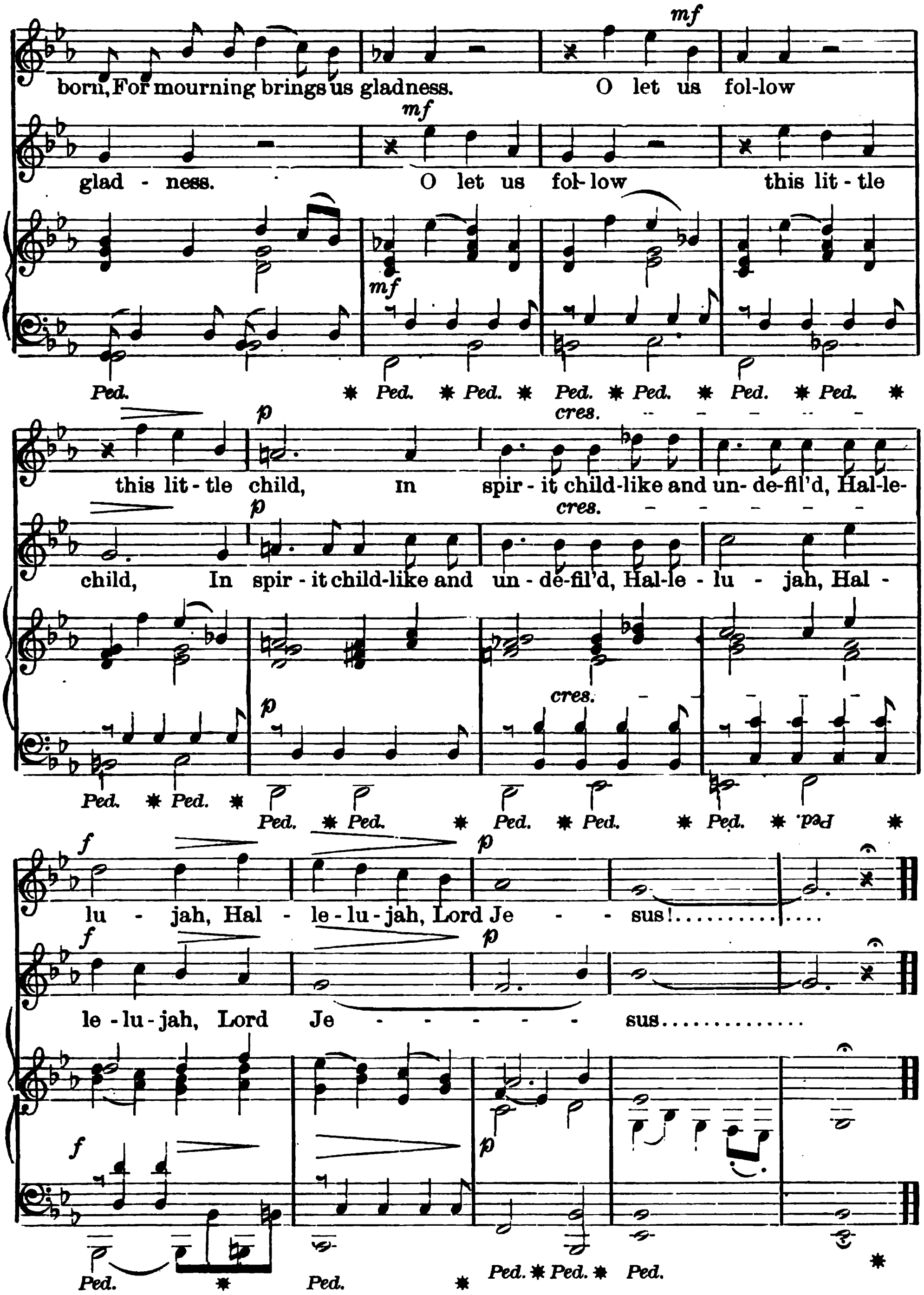
CARL REINECKE

CARL REINECKE.


Andante con moto.
1st voice.
2d voice.
Piano.
mf
f
When the Christ was born, the Very Light, Man - kind to re-deem un-der- tak - ing,
When the Christ was born the Ver - y Light, Man - kind to redeem un-der tak - ing.
p
He lay in a man - ger at dead of
He lay in a man - ger at dead of night, His bed with ox - en
Ped.
*

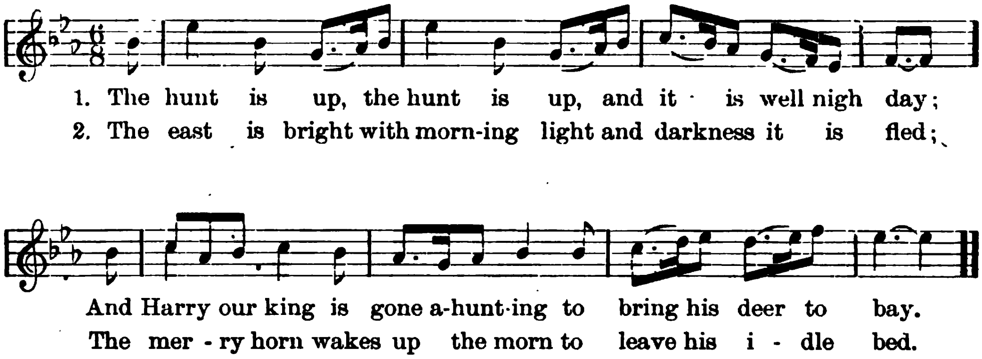

mf
night, His bed with ox - en mak-ing: But o - ver the
mf
mak - ing: But o - ver the man - ger
mf
Ped. * Ped. * Ped. * Ped. * Ped. * Ped. *
p
man - ger a star glit-ter'd fair, And the
p
a star glit-ter'd fair, And the ox - en knew that the
p
Ped. * Ped. * Ped. * Ped. * Ped. * Ped. *
cres. f
ox - en knew that the Lord was there, Hal - le - lu - jah, Hal -
cres. f
Lord was there, Hal - le - lu - jah, Hal - le - lu - jah, Lord
cres. f decres.
Ped. * Ped. * Ped. * Ped. * Ped. *


p
mf
le-lu jah, Lord Je - sus! Then
p
mf
Je - - - - - - sus! Then rouse thee, my soul, thou art
p
mf
Ped. * Ped. * Ped. *
rouse thee, my soul, thou art not forlorn. For - get thou the weight of thy
not for-lorn, For - get thou the weight of thy sad - dess,
Ped. * Ped. * Ped. *
p
sad - ness, This child in the cit - y of Da - vid
p
This child, in the cit - y of Da - vid born, For mourning brings us
p
Ped. * Ped. * Ped. * Ped. *


mf
born, For mourning brings us gladness. O let us fol-low
mf
glad - ness. O let us fol-low this lit - tle
mf
Ped. * Ped. * Ped. * Ped. * Ped. * Ped. * Ped. *
p
cres.
this lit - tle child, In spir - it child-like and un- de-fil'd, Hal-le-
p
cres.
child, In spir - it child-like and un - de-fil'd, Hal-le - lu - jah, Hal -
p
cres.
Ped. * Ped. * Ped. * Ped. * Ped. * Ped. * Ped. * Ped. *
f
p
lu - jah, Hal - le - lu - jah, Lord Je - - sus!..........
f
p
le - lu - jah, Lord Je - - - - - - sus..............
f
p
Ped. * Ped. * Ped. * Ped. * Ped. *

THE KING'S HUNT IS UP.

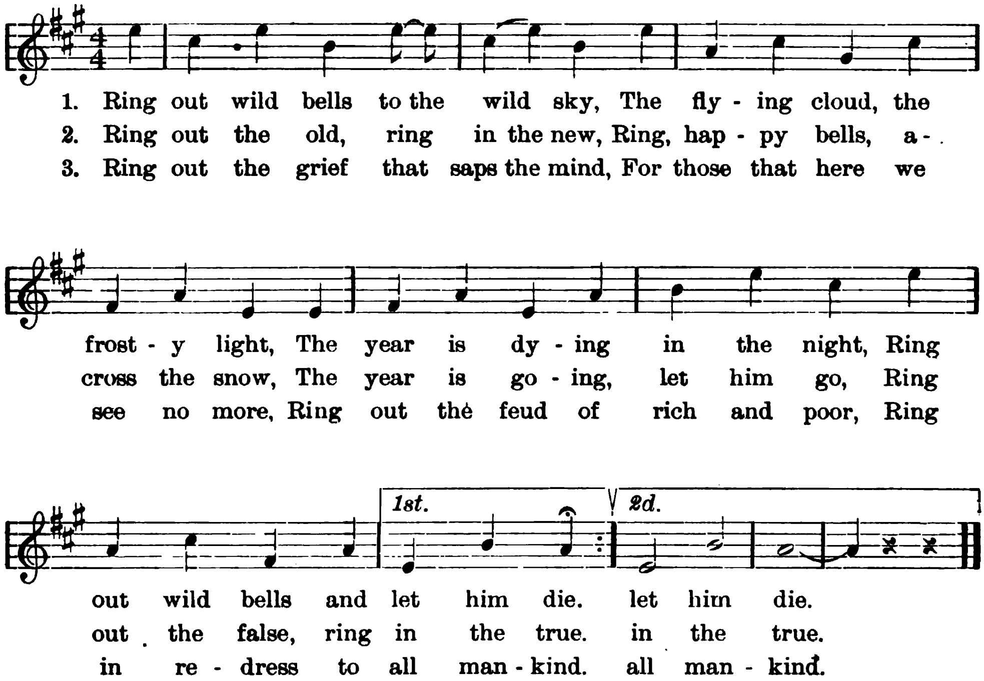
Old English.


1. The hunt is up, the hunt is up, and it is well nigh day;
2. The east is bright with morn-ing light and darkness it is fled;
And Harry our king is gone a-hunt-ing to bring his deer to bay.
The mer - ry horn wakes up the morn to leave his i - dle bed.

RING OUT, WILD BELLS.*

Tennyson.

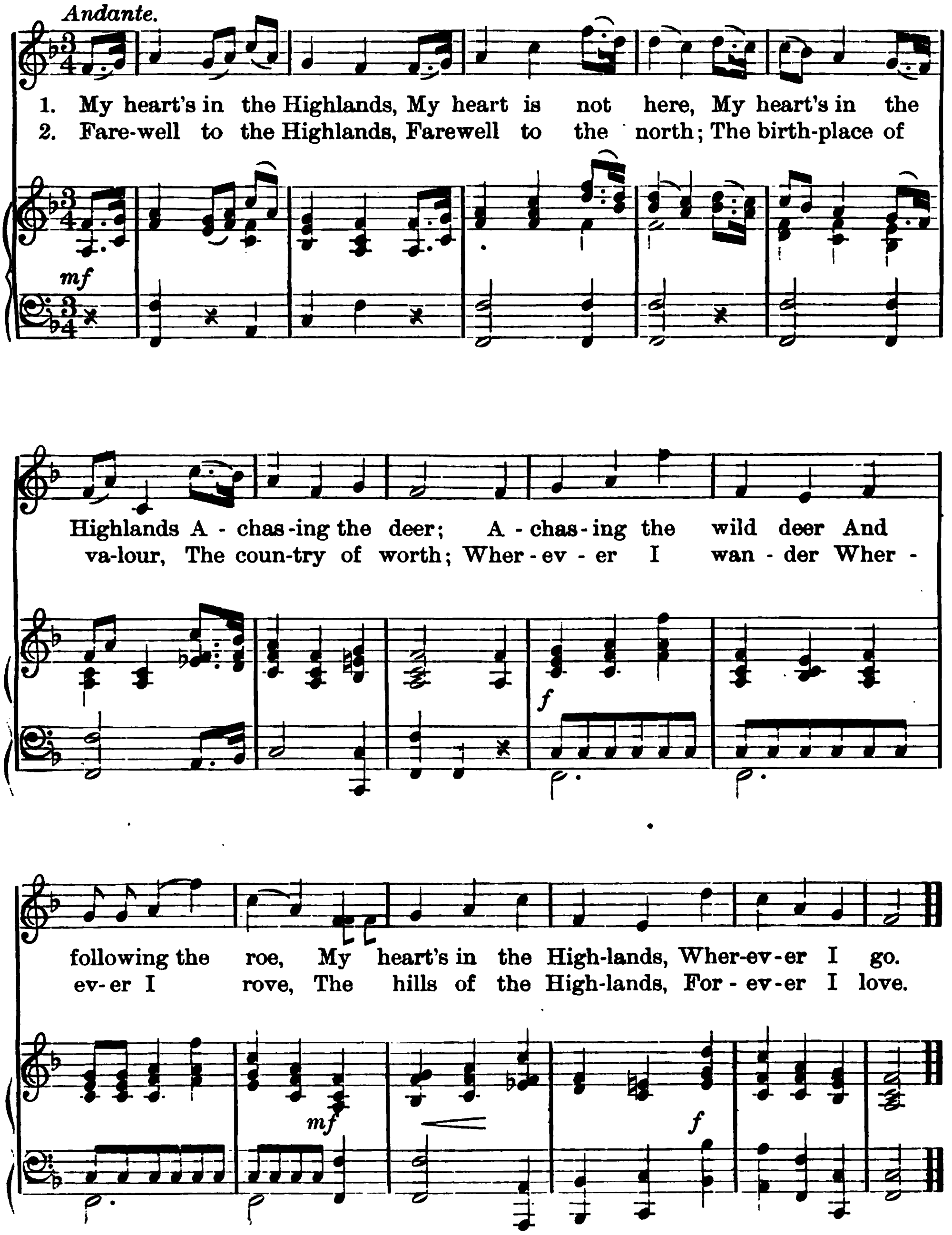
W. W. Gilchrist


1. Ring out wild bells to the wild sky, The fly - ing cloud, the
2. Ring out the old, ring in the new, Ring, hap - py bells, a -
3. Ring out the grief that saps the mind, For those that here we
frost - y light, The year is dy - ing in the night, Ring
cross the snow, The year is go - ing, let him go, Ring
see no more, Ring out the feud of rich and poor, Ring
1st.
2d.
out wild bells and let him die. let him die.
out the false, ring in the true. in the true.
in re - dress to all man - kind. all man - kind.

---

*From Songs of Life and Nature. Scott, Foresman and Co.

MY HEART'S IN THE HIGHLANDS.


Andante.
1. My heart's in the Highlands, My heart is not here, My heart's in the
2. Fare-well to the Highlands, Farewell to the north; The birth-place of
mf
Highlands A - chas-ing the deer; A - chas-ing the wild deer And
va-lour, The coun-try of worth; Wher - ev - er I wan - der Wher -
f
following the roe, My heart's in the High-lands, Wher-ev-er I go.
ev-er I rove, The hills of the High-lands, For - ev-er I love.
mf
f

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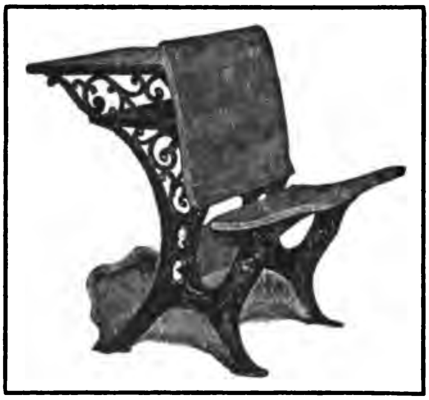

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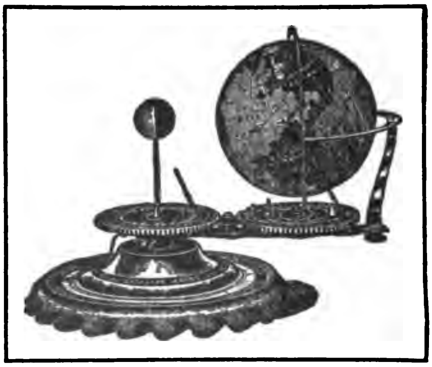

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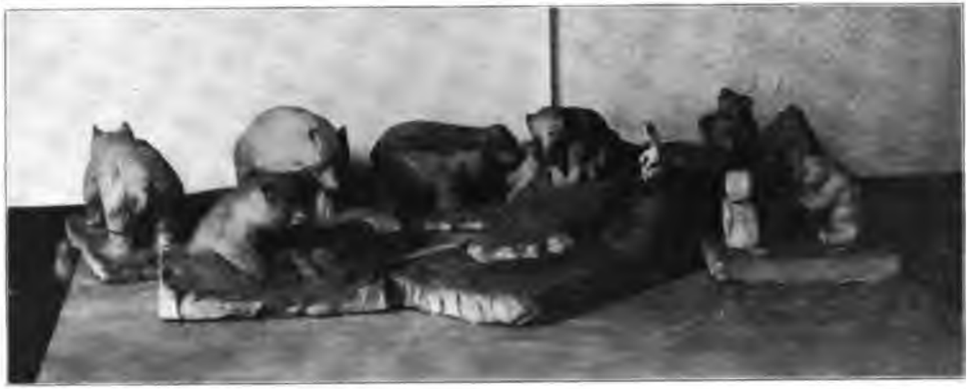

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THE COURSE OF STUDY

A PUBLICATION FOR TEACHERS AND PARENTS

ISSUED MONTHLY—TEN NUMBERS A YEAR.

Reading in the Primary Grades

Flora J. Cooke

THE TEACHING of reading is a question that appeals to every teacher in the primary grades. It is therefore chosen as the first subject of discussion in this department in the COURSE OF STUDY. On account of limited space it was thought best to present in this article only the general plan of work, and some of the reasons for its adoption.*

THE PRESENT WORKING HYPOTHESIS is that the children may learn to read as naturally as they learn to talk and for exactly the same reason, i. e., from the desire to find out something or to tell something.

If this hypothesis is accepted reading will be used only as a means of arousing images.

Considered from the child's standpoint, learning to read will be incidental to some other work in which he is interested, as manual training, literature, or nature study; and the mastery of the mechanics of reading and writing will be essential to the children, both in the gaining of desired ideas and in their expression. Thus they will add their motive to that of the teacher and both will work directly to the same end.

It would be most helpful in discussing this question to analyze the prevailing and established methods of teaching reading, as the phonetic, word, and sentence methods. In each case one finds some principle so exaggerated and focused in such strong light by the unqualified approval of its originator that its value can be most easily seen and appreciated; but it is in its application that we recognize the limitations and dangers of even the best of these systems.

In the use of any of the so-called successful methods, the teacher invariably fails until she discovers some stimulus which reacts upon the will power of the children. They must first desire to read; after the desire is awakened the child will learn by any method, with or without a school. He will find a teacher. The line of least resistance which he instinctively follows, the economy of time and effort exercised by him when teaching himself to read, is an excellent school of observation. Yet the service to the child of the right teacher cannot be overestimated. She can understand his instinctive efforts and supplement and aid him by her knowledge of the laws of association, interest, and fatigue; and upon her choice of material will depend, to a large extent, his early reading habits and tastes. She is sometimes needed to counteract the false sentiments which overanxiety and pressure in the home cultivate in children. Very often their first desire to read is secondary to another motive, the desire to gain praise or reward from teacher or parents, or even to escape punishment. But in every case all who have watched little children learning to read will agree that success is in direct ratio to the intensity of the desire as measured by the child's willing effort and growing satisfaction in his work. The old law of custom asserts that a child must first gain vocabulary; he must mechanically repeat words and idioms until they are functioned. This dead process has been for years sugar-coated with pictures, lately with most artistically colored ones. It is now taking the form of the action game.

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* These observations appeared in part in *Primary Education* for March, 1900.

The action game certainly has a place in the child's life. It is good in so far as it is an unconscious incentive to closer observation and bodily control. There are no games which children enjoy more keenly than those in which they act out something (varying from the simplest exercise to a complex story), while the class tries to guess what is represented. The written descriptions of birds, flowers, etc., are equally valuable and enjoyable, and their interest helps them to overcome many obstacles in reading and writing. Again, there are necessary things to be done all day long, where the teacher may use the blackboard for giving directions, utilizing this form of the game.

But why waste the effort and energy of the children in an endless "Close your eyes," "Open the window," "Roll the sphere," just because the action will hold their attention? As a method of teaching reading, it seems to me that it must take its place as a merely attractive way of getting the old-fashioned mechanical drill on words and idioms. We have all recognized the law that color and action are to children the "ignition points" of interest in the objects around them. Are we not ready for the next step?

GAINING THE NECESSARY REPETITION OF WORDS: We believe that there is a legitimate repetition of words inherent in the study of any subject worthy twenty minutes of the children's time. Surely there is color enough and action enough in doing things of relatively permanent value to them. The following illustration may make this point clearer: The child comes daily into contact with the same things in zoölogy, botany, geology, and meteorology. The same words come constantly into use as he watches and asks questions concerning the things which attract him. For instance: For explanation and expression concerning the movements of the common animals, as the birds, insects, fish, horse, cat, dog, one set of words is demanded, as fly, crawl, swim, run, etc.; for describing their coverings another, as feathers, scales, hair, and fur; other words and several idioms are necessary in considering their food and homes. The little child cannot go far into the details of animal study. He does not care to analyze except for one purpose: the understanding of some special thing which he wants to know. A forced, close analysis kills interest, as does the repetition of facts which he already knows, as "The rabbit has two eyes," "The leaf is green," etc. How then can he get the necessary repetition? It comes naturally if he is allowed to come into contact with real things. For as he cannot go far into the minutiæ of animal study, he turns to something else, perhaps to the plants. He finds here the same familiar animals dependent upon the plants for food; or if he works in his garden he sees the use of the soil to both plants and animals, and he comes gradually, incidentally, and through simple experiments to notice how all depend upon heat and light and upon each other for existence. It is all one thing, and it makes no difference where the child begins if the teacher knows what he is doing and follows him. Working with the same things again and again, from different standpoints of observation, must bring about repetition of the same words, for he meets the same things in stories, in nature, in different phases of industry, personal and social; moreover, the constant changes in the things themselves continually demand new words; so that the child's vocabulary grows naturally as his mental images expand.

THE TEACHING OF NEW WORDS. These are selected because of their necessity in written expression, as usually they have already been in the child's speaking vocabulary. Their presentation is also of immediate use in impressing more strongly the work in hand. The nature of the lesson, a story or an experiment, determines the details of the presentation of the words, but the plan is in general as follows: As a material or object is used, and the child is told what it is, its name is written upon the blackboard that the child may associate the written form with the thing of greatest interest at the time. That word is usually not again used orally during the lesson, the teacher pointing to the written word or writing it every time the thought demands its use; but the strongest impression is made by the child's own expression. They have perhaps been examining the soils, and the teacher asks, "Which soil will you use for your garden?" The children all pass to the blackboard and answer "sand" or "loam" according to their choice. This is a record and is used as such in the work that follows in finding out which soil is best. During the first lessons the children express their thoughts, when possible, in one word, later on in full sentences. From the first, full records are made and used. During or after an experiment the children tell what was done and discovered, and the teacher writes their statements upon the blackboard, and thus they picture the experiment over again step by step. If they have mastered the necessary written forms they pass directly to the blackboard, and tell what they had, what they did, and what they found out. These statements are often copied by the teacher and sent to the printer. In the reading lesson which follows, the children's motive is to see if all have found out the same thing. In this manner drill is obtained which is justified by the fact that it is incidental to some result, for which the children feel an immediate use. It will be seen that while writing and reading have each a distinct place and purpose in all the work, the one supplements and reënforces the other.

WORDS WHICH HAVE NO INTRINSIC MEANING, as conjunctions, definitive adjectives, prepositions, etc., are generally functioned by use, but they receive special attention whenever individual children seem to need it. Drills of this kind are understood in a common-sense way as means to a definite end, and the time of the entire class is not wasted upon forms which are already in automatic use by many of the children.

THE USE OF THE DICTIONARY. A good plan to make the children independent in the use of words is to allow each child to make and index a simple dictionary in which he places the written and printed words as fast as he becomes familiar with them. One period each week is usually devoted to this work. The words thus functioned and placed in the dictionaries would probably average about three hundred during the first year, and they do not differ to any great extent from the words in an ordinary "first reader."

PHONICS. The work in phonics has been, during the first part of the first year, entirely distinct from the work in reading. Its purpose has been to give the child the independent power of associating certain sounds with certain forms in the most economical way to strengthen his

History and Literature

Emily J. Rice

The conditions of modern life are forcing us to a wider interest in social welfare and a new conception of social duty. We are slowly coming to believe that the individual realizes his best self only in the larger experience of the whole. This view of life involves a conscious attempt to give the individual a true appreciation of his relationships. As long as we are without a knowlege of the needs of the community, and without a consideration for the general interests, society must suffer. The task of education is to furnish conditions for the development of the social spirit. This demands that the school bring to bear upon the child all those influences which tend to give an understanding of human life and to cultivate habits of helpful action.

Acquaintance with society comes to the child in two ways. It is constantly making demands upon him to which he must respond; he learns to interpret his own actions by their effect upon others, and so finds his place in present life. This action and reaction begins in the home, and gradually takes in wider relationships; by it the educational process is carried on unconsciously; through it the natural evolution of society takes place. But the school may add to this natural process by giving the individual a more adequate conception of his social inheritance. Progress demands that we build upon the foundations that others have laid, and the needs of society can be fully met only by those who appreciate the way in which it has been molded into its present shape. It is the value of race experience that gives to social study its importance.

Immediate interests furnish the key with which to unlock this treasure-house of the past, and where knowledge of the past is intimately related to the present it becomes a stimulus to action. If we take the child out of his environment and compel him to live in times utterly foreign to his experiences, history must be an isolated and lifeless thing.

Since it is individual interest in present life on which history must build with vivifying and broadening influence, it is necessary to take into account at each step of our work both the child's experiences and the related experiences of the race. Our history course must not necessarily follow the order of historical progress, but find its material in whatever illuminates the activities in which the child is taking a part, since by these activities he is entering into race experiences. In the social study of the school it is possible to organize these activities to better advantage than in the home. Here the children may share in the labor that has been the means of race improvement, and trace from the primary necessities of man his industrial, social, and political progress. The industries, social life, and political institutions of our own time all have their meaning rendered more clear by the search-light of historic revelation, but each must be used as material for study only as the children can enter into that phase of human experience.

KINDERGARTEN: As the youngest children are especially occupied with what concerns people, with action, with the work that is going on around them, the panorama that human life presents is for them the best means of education. The conditions of human life that appeal to them are not the same as those which appeal to older people. They are interested in what others are doing, that is, chiefly in occupations. These they have observed in the home and immediate neighborhood. In the Kindergarten, home life and neighborhood life will be reproduced by means of simple material for building and furnishing a playhouse, and by games which utilize the child's desire for play. Experience has taught us to expect little except observation and imitation of existing conditions. We shall not undertake to trace the history of occupations, but shall confine the work to what is merely social. In October we shall begin the construction of the playhouse.

First Grade: The work for this year will continue the study of the children's own home life, and the industries with which they come into immediate contact. The children will experiment in making, furnishing, and decorating rooms of a playhouse, molding clay dishes, cooking food, constructing garden tools, making cloth, and sewing. Their ingenuity in handling material will lead them to make, incidentally, many inventions similar to those that have met the primitive necessities of man. After they have made for themselves any special improvement in their work, stories from history will be told to show the work of others under similar conditions.

The materials that enter into their work, as wood, clay, grains, wool, flax, and metals, will be traced from their sources, and a simple study made of manufacture. The children will be encouraged to find the easiest ways of doing their work, and will visit some of the industrial plants that furnish supplies to the home, and thus gain an opportunity for comparing their own crude methods with those more advanced. The subjects of lighting, heating, and ventilation will be considered. Each problem will be set in so simple a way that the children may understand it, and our aim will be to cultivate inventiveness, independence, and manual skill. As in the previous year, the work is chiefly social, but some use is made of historical and literary stories to broaden the child's view of the value of his own efforts. In October, we shall consider the question of building, and visit lumber-yards and houses in the process of construction.

Second Grade: In this grade we add to the work the children have already done in industries a more definite historic study. We go back in time to those who made the beginnings of inventions—to primitive man—and trace the development of the arts through their earliest stages. To the little children, a long time ago may be one year or many centuries. It is a question not of nearness in time, but of psychological nearness. These early people did their work by very simple methods—methods which the children approach more nearly in a dramatic way than those of any people of a later time. The inventions which they made, the children are often able to make for themselves. Each step involves presentation of conditions by the teacher and drawing of conclusions by the children. It is not our object to teach the facts about savage or barbarian life, but to build up gradually a conception of the meaning of the arts of our own time. It is the savage as a worker, an inventor, a helper, that we deal with, and it is possible to trace with each improvement in the arts an improvement in social condition. The hunter becomes a shepherd and the shepherd a farmer. Settled life takes the place of wandering, and this marks the dawn of civilization. The children see the hard work involved in improving any present state, and how people outgrow crude methods of living. The material which this primitive life affords we have found to be the simplest means of showing the relation of past and present, and therefore the most suitable for the beginning of the history course. For the first month, we shall consider the earliest homes, the tree, the cave, and the hut, and study the problems which led to the invention of the crudest tools and of fire-making.

THIRD GRADE: In the Second Grade, the children are expected to carry the work in primitive culture as far as the metal stage. In the third, we shall take up the discovery and use of metals, and the children will do some practical work in making metal tools. For history lessons, the Homeric age of Greek life has been selected as furnishing a good type of this stage of culture and an advance upon the primitive people studied before. We shall also consider the beginnings of trade and commerce and the building of cities. This work will center around the life in Athens. In October, the story of Ulysses leaving his home for the Trojan War and his long sojourn there will be told to introduce the subject.

FOURTH GRADE: The growth of the city begun in the previous year will be carried on in this grade with Chicago as its basis. By the use of material from local history, the conditions may be imaged most distinctly. We shall first trace the early history of Chicago, visiting historic sites and relating the work closely to the topography of the region. The conditions that have led people to come to Chicago will be next considered and comparisons made with life in other regions of our own country and in other countries. Important cities may be pictured by means of photographs and the stereopticon, and some notion of the elements that make a city beautiful may be discovered. Lastly, the children will plan an ideal city and construct a model according to their own invention.

The work will begin with an investigation of present business conditions, appearance of streets, and relations to other parts of our country. Later, we shall inquire into the origin of these conditions.

FIFTH GRADE: In the Fourth Grade, the children have been led through the study of the growth of Chicago and the surrounding region to some consideration of the settlement of other regions. This year we shall take the earliest settlements in our country as our subject of study. Colonial history demonstrates most clearly the dependence of man upon certain definite physiographic areas. The children may build upon the foundation that primitive culture has given them and trace the relation of geography to occupations and of occupations to social life and government. They have now gained sufficient power in reasoning from conditions to make each problem of the settler in overcoming difficulties their own. Some of the hand-work of this home period of industry will be done in school, especially work in wool with wheel and loom. Through hand-work and dramatic representation of the period we shall aim to keep up the vitality of history study. Literature will be used as in all other parts of the course to help the children to grasp the ideals of man's life, but it will be used in each case in connection with the children's expression in their own best way of the conditions of the period.

It is in this grade that we shall first put emphasis upon the study of government. The town meeting presents the problem of government in so simple a form that it can be shown to grow naturally out of the necessities of the colonists. If the children realize the meaning of the town meeting in a dramatic way, they may gain some notion of the importance of self-government. In October we shall study New England, especially from the industrial standpoint. The children will read selections from Whittier's " Snow Bound," and begin the study of Longfellow's " Miles Standish."

SIXTH GRADE: We have been gradually leading backward in our history from the present until we have reached the period of discovery. This will be our subject for the Sixth Grade. It will lead us to consider European conditions at the time of the Renaissance and to inquire into the geographical knowledge of that time. We shall need to relate our work closely to the study of the geography of Eurasia. The children's interest in current history will be one determining factor in the plan of the course.

In October we shall study China and try to determine the causes of its peculiar isolation, even to our own time. Following this the story of Marco Polo will lead to a consideration of the lines of trade from Europe eastward in the age of the Renaissance and the importance of the cities of northern Italy. We shall study these cities as art centers and aim to show the children something of the meaning of their art. A comparison of Florence and Venice in the Renaissance with our own city will show the great changes since that time in lines of trade and in industrial conditions. The children will then try to discover how these changes have been brought about.

SEVENTH GRADE: In this year the children will trace the early settlers in this country from their old homes in Europe and try to discover what ideas of social life and government they brought with them. Leading backward, they will come to a time when Rome was the mistress of the world, and will inquire how she became so. They will then trace briefly the development of the Roman Republic and see how its people first learned to govern themselves, and then were able to conquer and govern other people. This will be followed by a similar study of the Teutons, and of the development of European history up to the Renaissance. The work will be done in a very simple way with concrete, vivid material, and although we believe that children at this age are interested in learning something of the origin of modern methods of government, the social life and industries of the people will be made the basis for understanding political institutions. The effect of the freedom of the artisan in the middle ages upon his work will be illustrated by Gothic architecture, and by textiles and other industrial arts. In October we shall study the Roman Republic.

EIGHTH GRADE: In this grade the children will be better able than in any previous one to hold a problem in mind which they wish to solve, and to work independently toward its solution. We shall lead them to observe the present industrial, social, and political conditions of our own city and country, and then to inquire what has brought about these conditions. They will be encouraged to consult authorities and sources of history and find material which will answer their questions, but will not be expected to work without much help from the teacher. They will visit industrial plants and trace the development of the factory system of labor and its effects upon social life. By the study of any one industry, as the cotton industry, we shall be able to review much of the social and political history of the last century. The consideration of our city government and our present national government will lead to the whole story of the origin of our constitution and our party history. It is believed that with this social basis the children will at the end of the year be better acquainted with the story of our country than they would be by tracing that story from its beginning in chronological order. They will also feel a personal relation to what they study and consider themselves a factor in the movement of affairs toward better things. We have selected for the beginning of this work the relation of Chicago to the country, its present industries and appearance.

High School

The work in History and Literature is continuous throughout the course, and, unlike that of the lower grades, is arranged in chronological order. Beginning with Primitive Culture, Oriental Civilization and Greek History in the first year, it follows the order of historic progress down to our own time. It will be our aim to organize the subject-matter in relation to political economy and sociology. Instead of placing emphasis chiefly on political institutions, other phases of interest, such as industrial life, commerce, and art, are considered equally important. We shall cultivate habits of independent work by encouraging the use of sources of history.

First Year, Ancient History

October—Primitive Culture: The teacher will present conditions which led to the earliest inventions of man to provide himself with food, clothing, and shelter, and the pupils will make inferences in regard to these inventions and their results upon social life. We shall study in this way without text-books the steps through the hunter, shepherd, and agricultural stages of human progress up to civilization. After the pupils have made their own study thus far, they will be asked to read such books as Starr's *Some First Steps in Human Progress* and Mason's *Origins of Invention*. By these they will verify or correct their own conclusions. This will be followed by a study of mythology, for which see *Cult of Greek States*, by Farnell, and *Primitive Culture*, by Tylor.

(To be continued.)

Clay Modeling in the Summer School

Antoinette Hollister

The first clay modeling done by the training class in the summer school was illustrative of the study of prehension in connection with nature study.

The students modeled a squirrel eating a nut, a woodpecker getting its food from the tree, a gopher, a crayfish and a lobster.

Some animal stories were illustrated after a few preliminary studies had been made directly from the animals in Lincoln Park. The frontispiece represents some of these attempts. This effort at illustration not only developed some originality on the part of the students, but brought into play all of the skill gained in the study directly from nature. It probably represents the best that was done by untrained students as a result of six weeks' experience with clay.

The literature placed in the hands of the students for illustration included some fables, Uncle Remus Stories, by Joel Chandler Harris, and selections from Rudyard Kipling.

A very little work in pottery was done, employing methods used by the Indians—that is, without the potter's wheel.

The modeling done by the children was necessarily very crude. They peopled a cave which they had made of stone with representations in clay of cave men engaged in various occupations. They also recorded observations made on the field trips — a nest of eggs found on the sand dunes — the animals, and other things of interest at the Field Museum. All of the work of the children was done with the idea of conveying in this way some idea of their experiences to the other children at home.

The Course of Study

It is the purpose of "The Course of Study" to present in theory and practice a full exposition of the work of the Chicago Institute in the Academic and Pedagogic schools. This exposition will be continuous, and will consist of outlines of the work done in all grades and departments, prepared by the teachers of the grades and departments. Issued every school month, there will be ten numbers a year, none appearing during the vacation months of August and September.

The COURSE OF STUDY will be at once the curriculum, guide, and text-book of the students in the Pedagogical School, and a means of preparation for all persons who propose to attend the Chicago Institute. It is also intended to meet the needs of those parents who care to know, month by month, the theory and details of the work of their children in the Academic School. Persons who wish to study the new education will find many practical suggestions as to the application of its fundamental principles to daily schoolroom work.

Philosophy of Education

Francis W. Parker

The text of Volume I, No. 1, of the COURSE OF STUDY will be used as a basis for the study of the philosophy of education and the study of psychology for the month of October. Students are earnestly requested to examine every statement in the light of their own reason, and not to accept or reject a single proposition without thorough investigation and careful thought. Every statement is to be looked upon as a working hypothesis, to be proved true or false. The students will assist the teacher by being perfectly independent and rational in thought; the student who shows conclusively that any proposition is wrong will be of the greatest assistance to the teacher.

The initial work of the department will be an examination of the principles presented in Volume I, No. 1, of the COURSE OF STUDY. In order to help students, questions and subjects for discussion are given.

I. Study "The Plan and Purpose of the Chicago Institute," pp. 9–16.

What are the two diametrically opposed ideals mentioned? Discuss their relative values.

"An ideal determines and controls all methods and means that go into its realization." Is this statement true? If true, give a number of examples.

What has been your highest ideal in education? How have you striven to realize that ideal?

Is it true that comparatively few teachers are engaged in "studying the child and his needs"? What is your experience?

II. What is the cramming process?

What should be the purpose of an examination?

When should pupils be promoted? Who should be the judge?

What is the highest incentive for the study of education?

Is it true that character is the ideal universally recognized?

What is a pure democracy? Is it desirable? Is it possible?

What do you understand by the sentence, "The ideal school is an ideal community"?

III. Study each of the ten statements on page 10.

What is the difference between gaining knowledge with a conception of its immediate practical value and gaining knowledge without that conception?

"The true ideal community life brings all the human energies into full play and righteous exercise." Illustrate.

Is it true that present good is everlasting good? Illustrate.

Discuss: The needs of society should be the guide for education.

What is meant by "the greatest economy of effort"?

IV. What is morality?

All education is moral or immoral. Is this true?

Define educative concentration. Illustrate it.

Define and discuss correlation.

"Correlation is the inevitable outcome of concentration. It is the universal rule in all affairs except in education."

Show by example that all practical businesses and professions, except teaching, are conducted on the plan of correlation.

V. Show, if possible, what art is greater than that of teaching.

Give reasons why education is the science of sciences and the art of arts. Discuss.

How are ideals cultivated in a pupil?

Is it true that the methods commonly used in our schools are under the domination of mediæval ideas?

VI. What place have play and amusement in education?

Define and illustrate educative work.

What are the subjects of study under "Man"?

What are the subjects of study under "Nature"?

What other subjects of study are there, not comprehended under the study of man and nature?

Make a careful examination of what a child knows before he enters school. What did you know, and what could you do?

VII. What home work is educative?

Explain and discuss: "The different modes of expression have no mental or moral value in themselves."

Discuss the statements under the different headings of "Reading," "Writing," "Mathematics," "Art," etc.

Page 15, "Tests and Results": How may every recitation be an examination?

What relation should the school have to the home?

Syllabus of Lectures upon the Philosophy of Education: Page 16. Explain the three sayings:

"The school is society shaping itself."

"Education is not a preparation for life; it is life."

"Put into the school that which you would have the state."

I. Discuss the statements from one to six, inclusive, beginning on page 16 with (1) "Education should be the evolution of self-government."

What are social duties?

Is it true that citizenship demands the best, and all the best, of a human being?

What are the demands of community life?

What knowledge does a citizen need?

In what sense is a child capable of becoming a citizen?

How does community life appeal to the child?

II. Appeal to Common Sense: Page 17. Discuss, in order, health, helpfulness, trustworthiness, good taste, vocation, and citizenship.

What qualities of character are not here comprehended?

What is the relation of knowledge to character?

Do these qualities present definite aims for effort?

Character consists of habits. How are habits acquired?

III. An Examination of Conditions: Page 17.

The three propositions are:

1. That knowledge-getting is the prevailing purpose of education;

2. That knowledge as an ideal and end is utterly wrong; and

3. That the knowledge ideal is the inheritance of past ages, and shows the

binding force of tradition upon prevalent education in the United States.

The question for the most careful study is, are these propositions true? Can sufficient evidence be gathered to prove the truth of these propositions, or are they only partially true or altogether wrong? The students will take each proposition in turn, beginning with the first.

First Proposition: What are the demands of superintendents and school boards in regard to education?

What is the common guide in making a course of study?

What is the use generally made of a course of study?

What are the purposes of examinations?

What ideals do teachers in general strive to cultivate in their pupils?

To what extent is the mere learning and reciting of words the work of the school-room?

Write down all the facts that you can gather either for or against the first proposition.

Second Proposition: What guide is there for the selection of knowledge for a course of study, or for the teaching of pupils?

For what reason would you select a particular subject for a grade?

Is there sufficient proof in the fact that rewards and per cents are used for stimulus to show that children do not love knowledge and that, therefore, the knowledge ideal is a failure?

Do rewards and per cents cultivate selfishness, and is selfishness the root-vice of mankind?

Is it possible to gain a thorough knowledge of any subject through text-books?

What methods do you know of, and what is their purpose?

What is the difference between the studying of methods and the studying of principles of education?

Bring all the proof you can that knowledge as an ideal in education is wrong, or that it is right.

Third Proposition: What proofs can you bring that the knowledge ideal is the outcome of despotic governments, and that it has been and is still used to train the many into subserviency to the few?

This discussion will be continued in the November number under the heading, *Subject or Citizen.*

Psychology

Suggestions for a Course of Lessons in Psychology, p. 28.

I. The study of psychology will be strictly inductive. The initiative step in this study must be a close, thoughtful, examination of one's own consciousness.

Discuss: The purpose of the study of pedagogical psychology is to increase the ability to know the educative value of subjects, and to discover, step by step, the evolution of thought in the minds of pupils.

What is the greatest danger in all study? And is it true that "nothing can be learned primarily from books"? Why?

Is it true that if one dislikes a subject it is a sure indication that he has never really studied it?

II. Consciousness is the ever-present laboratory for the continuous study of mental phenomena. The stream of thought in consciousness is constantly changing; that is, thoughts are continually coming and going.

Past thoughts or images may be recalled.

Explain consciousness (if you do not understand it, ask questions.)

What do you understand by the introspective method?

What are the difficulties in the study of psychology?

Study the following statements:

"I see" means that I am conscious of something.

That something of which I am conscious is in my consciousness.

In every act of the senses there is consciousness.

In any act of the senses of what am I conscious?

Make a number of experiments in this direction.

How do you explain the statement that all questions may be psychological?

III. The students are requested to make many examinations of experiences, with these questions in mind:

What do I recall?

How am I able to recall images?

It is suggested that the students make a thorough study of their early travels, and try to relate reminiscences from their first recollections to the present time.

Is it possible to have a state of consciousness without images?

Experiments in reading may be made very interesting.

Try to recall, or better, try to relate, the substance of any novel you have ever read. Describe a sermon or lecture that you have heard.

Why is it that you cannot understand some lectures?

Work with Your Hands: Is it possible to do any work without first imaging what you propose to do?

State the processes of imaging while you are at work. You will find that you have gained a great many images outside of school, counting from your earliest recollections to the present time. You have also gained images in school work. Where have you gained more images: in the school room or out of it?

Results of Study: Test yourself by your former study of geography. Image all you have learned, for instance, of the United States. Do you hold the image of the map, or of the real country?

Make similar tests in history. How many images have you remaining from your study of the Revolution? Can you begin at Lexington and recall a series of images through to the close of the war?

What images are clearest and best related in all your study?

If you have few images as a result of study, what have you?

The Art of Teaching

The course in the Art of Teaching will be an examination of all the syllabi written by the faculty of the school and contained in the Course of Study.

Please make a study of all the departments of the school as given in the syllabi of the July number of the Course of Study. Special attention should be given to the Department of Applied Pedagogy (page 73).

History of Education

The work in the History of Education for October will consist of autobiographies of the individual students. The students are requested to prepare for this work by writing out a history of their own education from the beginning. To guide students, a few questions and suggestions are given. Students must not by any means confine themselves to these questions and suggestions, but write out their personal histories as fully as possible.

Describe the first school you attended. What are your impressions in regard to it?

How did you learn to read? to write?

How and when did you begin number?

Describe, as far as possible, the beginning and the course in each subject; for instance, how and when you began geography. What have you now left of the study of the subject?

Describe the teacher who, in your opinion, did you the most good.

Describe the teacher whom you liked the best.

What objects were used in teaching?

To what extent was your reasoning power appealed to?

What words did you learn that you did not understand? Describe how you were taught to write, draw, and paint?

In your opinion, what is the best thing in your education?

Estimate the time you lost, if any, by imperfect teaching.

What stimulated you to study?

What study did you like the best? Why?

What studies did you dislike? Why?

Kindergarten Pedagogy

Bertha Payne

The work of the month will be a study of the earliest stages of mental and bodily life. This will be preceded by a general discussion of the needs of the children under seven years of age in the way of directed employment of their powers. Observation of children in the kindergarten will be a most important preparation for the class discussions.

1. Why should teachers of older children study children in the earlier stages of growth? Froebel was led from the teaching of the older boy back to the playing child, and then back to the infant. Why?

2. What have you seen in the conduct of children under six years which suggested the need of training before that of the primary school?

3. What have you to say to the following statements: "The young child needs first of all bodily freedom and should live the life of a healthy young animal." "It is a mistake to stimulate mental activity or restrict bodily activity." "This over-stimulation and restriction are found in the kindergarten."

Observe children in the kindergarten and out of it with these statements in mind. How may certain common conditions of city life modify these views? Of country life?

Reminiscence: 1. What do you remember of your childhood before the age of seven years? Are these memories connected or broken? Do you remember how you felt toward people and events? When you recall a memory accompanied by strong feeling, what is the character of the related images—clear or blurred? Can you recall the playing of any games? Describe those you liked best. Were they played with one other, with several, or with many? What was the special point or end to be attained? Did you keep to the form as a rule? Observe children under seven years at free play. Record any instances of game-playing that you have seen.

2. Did you "make-believe"? Did you imitate other people? Did you invent situations and carry them out? If so, was there a coherent story or plot? How many usually took part in these plays? Was there a leader, or head? Give subjects of as many of these plays as you can remember. As you look back, can you discover any educative value to yourself or to others in these plays? In observation of the kindergarten games and plays, can you find any points of resemblance to those of your childhood? Of difference? Any greater value? In what motives or impulses were they rooted?

3. Do you remember your first day at school? What was your feeling toward the teacher? Toward the other children? Do you remember your work? How old were you?

4. Can you remember the playthings you liked best? Give list. Describe some plays that you had with them. How did they compare with the playthings of the kindergarten?

5. Relate some events in which you took part with pleasure. What was your feeling toward people and things, and what degree of effect, if any, did these experiences have on your play? On your interest? Have you noted any instances in biography of the persistent trend given to thoughts by environment, or by some single strong experience? See Pierre Loti's *Life of a Child;* autobiographies of Benvenuto Cellini and of Goethe; *Life of Macaulay,* by Trevelyan; Froebel's autobiographical letter in Barnard's *Child Culture Papers.*

Observations: 1. Is the kindergarten training a beginning in education? Where would you place the beginning? Who and what are a baby's teachers? Does the mother educate him with conscious purpose? How do influences from without reach him? How do you know?

2. What would you call the spontaneous activities of a baby? What is instinct? What is impulse? Make a list of baby plays that you have seen. What elements have they in common? Where does the attraction seem to lie in each case? Do they require the coöperation in any sense of another person? What is the motor force? What is the bodily and mental effect? In what sense are they educative? What can we learn from the earliest acts of a baby that

will help us to understand the kindergarten child?

3. What are the first impulses? What are the first things that attract attention? Color. Light. Movement. Sound. Bodily signs of attention. Mental and bodily effects of attention. Periods of activity. Length. Intensity. Effort. Describe the mind and body movement in the following actions: Start at a loud noise, first effort to follow a moving light, to grasp a ball, to sit erect.

What is the spur to repetition? What is the mental and bodily effect of each successful attempt? By what process does a child learn to direct his movements? Can an infant get the class of notions that we express by such words as far, near, high, low, up, down, fast, slow, here, there, large, small, hard, soft, without bodily motion? What part does similarity play, and what contrast?

Describe one of the earliest acts in which you think you can trace the following as parts of one process: Feeling of pleasure or pain, controlled motion, distinct images.

References on Instinct and Impulse: *Mental Development in Early Infancy*, Dewey; see Transactions Illinois Society for Child Study, Vol. IV, No. 3; *Infant Mind*, pp. 135-140, Preyer; Briefer Course, pp. 392-406, James; *Outlines of Psychology*, p. 278, Wundt.

Department of Natural Science

Ira B. Meyers Wilbur S. Jackman Charles W. Carman

The Professional School

It is the aim of the work in this department to afford to students preparing to teach whatever assistance there is to be derived from a study of natural science. Broadly speaking, the work is comprehended under three heads, namely: (1) Psychology — involving a study of the development of the mind under the stimulus of its nature-environment; (2) Pedagogy, involving an investigation of the inter-relations of the so-called subjects of study and a careful development of methods of teaching; (3) History of Education, showing the part that man's interpretation of nature has taken in the development of the race.

All of these studies will be pursued in the light of observations that the students can make for themselves upon nature, and in the various class-rooms of the academic department. Those who desire to prepare themselves for teaching in high or normal schools, or for college work, will be required, in addition to the ordinary qualifications for admission, to extend their studies through to one year's high-grade work in the academic school in the special subject chosen, or to present undoubted evidence of fitness for such training.

The Academic Department.

Courses of study are offered in the secondary school which will fit the students to enter the first-class colleges and technical schools of the country. The contact of the students with nature will remain unbroken, but the work, resting upon the broad basis of the earlier years' observation, will be specialized each year upon some particular lines of investigation. To this end a large amount of laboratory work will be required. The following outlines indicate the nature of the work planned for October.

BIOLOGY: A study of the micro-organisms of stagnant water; a study of the cell as a unit in the living organism, illustrated by a study of the protozoa of ditch and swamp; their relation to the food supply of higher forms of life.

I. Collecting material:

1. Field trip to swamp and lagoon for collecting material.

NOTE.—Select materials from (a) decayed plants; (b) living plant; (c) bottom ooze; (d) free water. Keep this material in separate bottles or jars.

II. Microscopic examination of material:

1. Examination of each collection.
2 Identification and drawing of typical cell forms.
3. Life habits—food, movement, increase.
4. Indications of distribution of these forms in the different material.
5. Estimation of number of forms in selected quantity of water.

III. Study of cell structure:

1. Parts recognizable in the several forms examined—their function.
2. Modification of parts.
3. Compare simple cell forms with cells of multicellular forms.

References: *Aquatic Microscopy for Beginners*, Stokes; *Animal Life*, Thompson; *Animal Life*, Jordon; *Biology*, Sedgwick and Wilson.

Museum Course: Insect life with special reference to preparations for winter.

I. Collections:

1. Study of winter homes in general.
2. Study of winter homes as grouped about decayed wood, bark of tree, rubbish pile, etc.

II. Field work; observation and collection of material:

1. Places selected by insect as winter abode.
2. Nature of homes, source of material.
3. Evidence of forethought in selecting location.
4. Changes of insect after going into winter quarters.
5. Protection.

III. Arrangement and mounting of collected material:

1. Point to be illustrated by the mounted specimen.
2. Material needed as aid in showing environment of the insect.

IV. The use of labels, reading references, and pictures as supplements to a collection.

The Primary and Grammar School

Continuous observations will be made upon the various phenomena of nature as presented by the succession of day, month, season and year. The course will include, also, a general survey of the various means by which man makes use of natural forces. Laboratory work and apparatus-making will be employed whenever the pupils may desire such means to be employed in testing or verifying the observations made.

The first month of the school year will be devoted largely, throughout the Department, to preparing apparatus, charts, and other materials needed in making and recording daily observations. The study will be directed specially to the mechanics and physics of the instrument employed, so that observations may be intelligently made. For detail outlines refer to the syllabus of each grade. The work is pursued in accordance with the following principles underlying presentation and expression. It is comprehended under the general term

Nature Study

Nature Study is a self-defining term. It is an expression that stands in its simplest form. The spirit of the work requires that the learners be intelligently directed in a study of their immediate environment in its relation to themselves; that, under the natural stimulus of a desire to know, there be a constant effort to rationally interpret the inter-relations of the common things that may be observed.

The work in Nature Study in the Chicago Institute in all grades will be conducted in accordance with the following general plan:

A. Careful observation of those phenomena of nature which present themselves in the surroundings of the pupils in the course of the year.

B. The use of all those subjects of study, including the laboratory as a means, which are necessary to the symmetrical development of a body of knowledge from the observations made.

The study of nature ultimately resolves itself into a study of energy. The great aspects under which energy may be observed—color, form, and force—are presented to the children through an inquiry into their functions.

As to methods of study and presentation the attention of teachers is directed to the following suggestions:

I. Begin the study with a comprehensive survey of the landscape as a whole.

1. Treat the landscape as an organism, not as a composite of confused facts.

(a) Note its strength: illustrated by the tenacity with which plants and animals hold their respective places.

(b) Note its delicacy of balance: illustrated by the influence of any change, however small, in causing a readjustment of the different parts.

II. Proceed from the landscape to its details; the study should be directed to its related parts, not merely to unrelated fragments. From the whole to the parts in this instance does not mean from the whole to the pieces.

1. Note the underlying unifying influence in the section of the landscape studied. For example, it may be the work of a river or creek; a lake or woodland.

2. Note the smaller units within the larger; for example, different slopes, a marsh or a piece of bottomland.

3. Observe the relation of the smaller units to the whole.

III. The landscape as a composite whole presents several series of aspects, each of which includes a well-defined succession of events.

1. The daily: transitory and irregular. For example, those caused by the movement of clouds, etc.

2. The seasonal: those dependent upon the temperature changes and other climatic influences.

3. The epochal: those requiring great lapses of time; for example, the drainage of a marsh; the shifting of a stream-bed, etc.

IV. The study of landscape details therefore means the following of each minor unity, through each of these series of aspects as the changes occur, with due regard to the relations of the various aspects to each other.

1. Illustrated by the study of a tree.

(a) Daily aspects: play of light and shade due to clouds, sunshine and wind.

(b) Seasonal aspects: those corresponding with the month and season.

(c) Epochal: those presenting themselves in the trees' growth, maturity, decline, and dissolution.

The landscape as a whole or any part of it presents similar changes in the same order.

V. The different series of aspects presented by the landscape appeal to the pupils in accordance with a definite order.

1. The fleeting aspects appeal earliest, through the esthetic sense.

2. The regularly recurring seasonal aspects in their relation to man rouse strongly the notions of utility. Observe the multitude of inventions and devices by which man seeks to adapt himself to the seasonal changes.

3. The significance of the great epochal changes appeal most strongly to the mature mind; it can be grasped only as the mind acquires power to arrange according to the rules of philosophy what has been gathered by the senses.

VI. Use the laboratories, collections, and special apparatus as means of answering questions which nature asks the pupils.

The laboratories, aquariums, alcoholic and dry specimens and apparatus enable the pupils to study phenomena in isolation or under special conditions for the purpose of determining the natural relations.

In Nature Study it is indispensable that adequate and intelligible records, corresponding to the modes of observation, should be carefully made and preserved. Such records may be grouped as follows:

I. COLOR. Records made in water-colors and colored crayon.

1. Pictorial history of the year in color. Below the fifth grade, a series of paintings showing the various aspects presented by the landscape. (See V, above.)

2. Above the fourth grade, daily paintings

of the landscape mounted in calendar form, month by month. Taken together these show the color aspects of the day, the month, the season and the year.

3. The disks are to be of colored paper, about two inches in diameter, each of which will suggest, somewhat arbitrarily, certain conditions of the weather. The following colors, named according to the *Bradley Educational Colored Paper*, are used: (a) Clear days, yellow; (b) fair days (three-tenths clear), orange yellow; (c) cloudy days, cool, gray, No. 1; (d) rainy days (.01 inch, or more), cool, gray, No. 2. First frost in autumn and last in spring, small white disk in the center of the large one; (f) snow, white. By properly dividing each disk into two parts the relative length of day and night may be shown—two different colors being used. An arrow drawn across the face of the disk will indicate the direction of the wind. The disks are pasted, day by day, upon a large cardboard in calendar form, and, thus arranged, they show in a very instructive way the distribution of sunshine, clouds, rainy days, etc., during the months, the seasons, and the year. The value of the record is much enhanced when it is kept in connection with the landscape painting mentioned above. The disk charts represent the cause, the landscapes the effects.

II. FORM. Records made by modeling in clay, and by drawings in charcoal, crayon, and pencil. Also by means of brush and colors.

1. Form in an organism or an object represents a concession to the influence of environment.

2. Form in maintaining itself represents a balance of forces and furnishes a means for measuring them.

3. Form-study is therefore mathematical; arithmetic investigates magnitude, geometry proportion, and algebra the balance of the parts.

4. Accessories needed: English and French units of measure of magnitude—rules, dry and liquid measures, scales and balances.

III. FORCE. Records generally assume the form of tabulated mathematical data. They may also be graphically represented by means of curves upon appropriately drawn charts.

1. As form is imaged only through a mathematical calculation and statement of magnitude, so force is imaged only through a mathematical calculation and statement of quantity.

2. Force is imaged only in mathematical terms, as pull or push, in pounds, grams, etc.

3. Accessories: scales, weights, spring balance, etc. All apparatus made is but a means of utilizing force for one purpose or another.

IV. TIME. Written records showing the duration and succession of natural phenomena. Also supplemented by means of graphic representation in chart form.

1. Meteorological record: showing various phenomena of the weather and the character of the season.

2. Graphic representation of distribution of sunshine, clouds, and rain, by means of colored disks of paper mounted in calendar form on cardboard.

V. Inferences, personal reflections, etc.: Written records. Written language furnishes the best means of making a record in a logical form.

1. Written records embody primarily what the mind works out through reflection.

2. The materials forming the basis of reflection are gathered through observation and supplemented by reading.

3. The records must be preserved and placed to the credit of the pupils.

VI. Reading and literature: A means of access to the experiences and feelings of other people and other times. Observation demands reading; the wider the observation, the greater the demand.

The introduction to reading is through the oral narration. The ability of the child soon outruns his dependence upon the oral narrative and the only substitute is the printed page. Reading, therefore, from the earliest moment should supply the real demand; *i.e.*, the pupil's desire to know concerning those experiences and feelings of others that are kindred to his own. Reading should never be a question of words, never a matter of vocabulary; but always a question of sense, always a matter of intelligence.

Pedagogic Course in Physics

First Year

Meteorology: (a) The province of meteorology. (b) Brief sketch of the growth of the study. (c) The modern contrasted with the early study of the subject. (4) Meteorological phenomena. (e) Meteorological instruments. (f) Construction and use of meteorological instruments. (g) Meteorological observations. (h) Barometer, barograph, thermometers, thermograph, anemometer, anemograph, hygrometer, rain-gauge. (i) History and growth of the signal service. (j) How to make weather maps. (k) How to read weather maps. (l) How to forecast the weather. (m) The study applied to animal and plant life. (n) The value of the study to commerce.

Pedagogic Course in Chemistry

FIRST YEAR

The Chemistry of Decay· Laboratory work upon material gathered from the field. (a) A determination of the composition of leaves, fruits, and grasses. (b) The changes that take place in decay.

High School Course in Physics

THIRD YEAR

Sound, Heat, and Light: (a) Kinds of vibrations. (b) Media of propagation. (c) Sound waves, heat waves, and light waves. (d) Interference, reflection, and refraction of waves.

High School Course in Physics

FOURTH YEAR

Magnetism: (a) Magnets. (b) The earth's magnetism. (c) Magnetic units.

Geography

Zonia Baber Wallace W. Atwood

Pedagogic School

The year's work will be the study of the Chicago field from the geographical and commercial aspects; also a similar consideration of the wider field of the continents of North America, South America, and Eurasia.

I. Value of Chicago and its environs as a basis of geographical study.

1. Genesis of forms of land and water.

2. Working forces: (a) Wind. (b) Waves. (c) Rain. (d) Streams. (c) Weathering agents.

3. Man's adjustment to this region: (a) Farming; gardening. (b) Quarrying; mining. (c) Cities; industries. (d) Commerce.

Which aspect appeals most directly to each grade of pupils?

II. Special study of stream work as shown in the small streams in the region of Glencoe and the Desplaines River.

1. Measure work of a stream done in a certain time: (a) Means of accomplishing the result: wearing power, carrying, and deposition.

2. Registration of stream work on the face of the earth in valleys of various shapes. (a) Relation of the shape of a valley to its erosive history.

3. Bed of stream. (a) Falls, rapids, and other incidents.

4. Effect of stream deposition at debouchure.

2. Use of rivers to man, to animals, to vegetation, to earth. Make valley forms, deltas, etc., in out-of-door laboratory.

NOTE.—Apparatus consists of small pond of water and hose of different sizes for conducting the water into streams.

III. Value of laboratory in teaching geographical subjects to pupils.

References: *Geography of Chicago and Its Environs*, Salisbury and Alden; *Physical Geography*, Davis; *Physical Geography*, Tarr.

First Year, High School

Physiography of the Land:

During the month as many field trips will be taken as is practicable, and the classroom and laboratory work will be based upon the observations made in the field.

I. Weathering, or soil-making.

1. Soils and subsoils: (a) Color. (b) Thickness. (c) Constitution. (d) Distribution.

2. Relation of loose, mantling material to underlying rock of region. (a) Did the mantle

material come from the underlying rock? (b) If so, how was it formed? If not, where did it come fròm? and how was it brought? (c) Residual and transported soils.

3. Agents of weathering and how each one acts. (a) Mechanical. (b) Chemical.

4. Rate of weathering.

5. Different kinds of soils and their influence on native vegetation and on agriculture.

II. Valley Development.

1. Origin and growth of gullies. (a) Why are there gullies on the surface of the earth? (b) How do they grow? In length, in depth, in width? (c) Forms of young valleys.

2. Getting a permanent stream.

3. Work of the stream. (a) Erosion. (b) Transportation. (c) Deposition.

References: *Physical Geography*, Davis; *Realm of Nature*, Mill; *Elementary Lessons in Physical Geography*, Giekie; *Physical Geography of New Jersey*, Salisbury; *Physical Geography of Devil's Lake*, Salisbury and Atwood.

Second Year, High School

Meteorology: I. Observational work in field and laboratory as to

(a) Changes in temperature of the air. (b) Changes in pressure of the air. (c) Constitution of the air. (d) Nature and use of each constituent. (e) Clouds. (f) Winds. (g) Storms.

II. Amount and distribution of the atmosphere.

III. Warming and cooling of the atmosphere.

IV. Changes in pressure. (a) In the great wind and calm belts. (b) In the storm centers.

References: *Elementary Meteorology*, Davis; *Meteorology*, Waldo. Weather Maps.

Third Year, High School

Historical Geology: I. Study of Stony Island and quarries about the city:

1. Kind of rock formation seen. (a) Its material. (b) Its structure.

2. Develop the idea of the formation of the limestone.

3. Develop the idea of changes in elevation of the land surfaces.

II. What other formations may have been made similarly to the limestone at Stony Island? (Sedimentary rocks.)

III. What were the sources of material for the first sedimentary formations? (Igneous rocks.)

IV. The processes which have always been at work bringing about geologic changes:

1. Destructive processes: (a) Associated with the atmosphere. (b) Running water. (c) Ice work. (d) Wave work.

2. Reconstructive processes. (a) Associated with swamp and river deposits. (b) Lake and ice deposits. (c) Marine and estuarine deposits. (d) Volcanic.

References: *Introduction to Geology*, Scott; *Text-Book on Geology*, Geikie.

Fourth Year, High School

Anthropogeography: The intimate relation of man to his geographical environment is a consideration of greatest importance in the development of the race. Man's ability to extend his environment by rapid communication until the world has become almost his immediate neighborhood characterizes the present civilization. An intimate and generous appreciation of all the peoples of the world is a basis for the realization of the brotherhood of man. The work in anthropogeography will be a general consideration of all the nations and peoples of the world, together with their geographical association.

I. Man's relations to his surroundings.

In what manner has man responded to the geographical environment in this region? How has he changed conditions to minister to his needs? What aspects seem most stubborn in responding to man's control?

II. Building of Chicago.

What elements have contributed to the building of this city? Of what nationalities is it composed? Account for the presence of the different peoples. Influence of the father country upon the character and habits of the adopted people. Visit regions occupied by special nationalities, as Italians, Greeks, Norwegians, Chinese, etc.

III. Industries of this region.

Why do certain industries obtain in this region?

IV. General forms of land and water, topography, and vegetation on the character and development of people.

1. Influence of continents, islands, seas, lakes, rivers, mountains, and plains on associated peoples. Give examples of each.
2. Special study of the great river valleys which have aided in developing primitive historical people. (a) Nile, Tigro-Euphrates, Indus, Hoangho. What conditions in each specially favored the growth of its respective people? What great geological changes have occurred? Are conditions favorable to primitive development equally potential in advanced civilization?

References: *Man and His Work*, Herbertson; *Earth and Its Inhabitants*, Reclus; *Compendiums*, Stanford.

Mathematics in the High and Pedagogic Schools

George W. Myers

More than a dozen years' class-room experience with mathematical students convinces the writer that the most serious criticism against current methods of teaching elementary mathematics is their utter failure to develop the mathematical sense, to give the student a degree of power to recognize the quantitative aspects of his environment in any way commensurate with the time and thought put upon these subjects. Teachers everywhere, recognizing that serious defects exist in current mathematical pedagogy, seem to be focusing their attention almost entirely upon the attempt to make the meaning of the mathematical processes clearer. In the writer's opinion this is not the main, or even a very serious difficulty. Nor does it appear to him that the lack of analytic power is so serious a matter as some would make it out. The crying need of the mathematical student of our time is the ability to recognize the place and necessity for the use of the numbering function in grappling with his environment. A very limited range of mathematical knowledge, with the power to use it practically, is worth far more to both the student and the world than an unlimited facility in the manipulation of processes without the ability to apply his skill to the concrete world. The ideal mathematician is he who, possessing enough mechanical skill to perform the arithmetical operations with ease, and enough analytic power to enable him to pass readily from the whole to its related parts, perceives with equal ease the abstract in the concrete, and the concrete in the abstract.

Algebra in the High School

1. Numbers represented by letters.

The representation of generalized number by letters should be taught before the high school. If this has not been done, use the relations between the sides and perimeters, areas, etc., of squares, oblongs, right, equilateral, and isosceles triangles. Draw these figures, cut off their angles, apply them to each other and note whether or not the angles are equal. Designate the angles by letters and represent their sums and differences symbolically.

Illustrative examples:

If a certain line be called x, what shall we call twice that line? Five times the line? a times the line? z times the line?

If a man is three times as old as his son and the son is b years old, how old is the man?

2. The use of the symbols $+$, $-$, $\times$ and $\div$ in algebra.
   - a. They have the same uses as in arithmetic.
   - b. Their extended uses in algebra.
   - c. Other ways of representing $\times$ and $\div$.

3. The use of the signs + and — to denote quality in number.

Positive and negative numbers defined.

Illustrated by readings of the thermometer, barometer, graduated circles, latitude, longitude, altitude, azimuth, heat, assets, etc.

The opposition of character implied in all these illustrations, and in all others, may be represented to the eye by selecting a certain point in a horizontal line as an origin, or starting point, and laying off to the right or left, according as the number to be represented is positive or negative, as many linear units as there are units in this number. This gives us a negative series of numbers equal in extent to the ordinary positive series of arithmetic, thereby extending the range of number to double its former compass.

In many algebraic problems two separate and distinct magnitudes must be simultaneously considered and must be kept distinct throughout the discussions. A simple method of doing this is to draw a vertical line through the origin specified above, and to lay off along this vertical, upward or downward, from this origin according as the second magnitude is positive, or negative, as many linear units as there are units in the second magnitude. We then have a simple means of keeping the two different numbers represented separate.

These two numbers are generally denoted by x and y. The former is usually measured off along the horizontal, and the latter along the vertical line. Following this convention, we may call the horizontal line the *x-line*, or the *x-axis*; and the vertical, the *y-line*, or the *y-axis*.

4. The equation taught and illustrated.

The meaning of the sign (=) may be taught concretely by the use of the balances in weighing. It should be taught long before the high school in connection with early work in arithmetic. Its value as a tool for the solution of practical problems may and should be shown quite early in the mathematical course.

As early as the grammar school it should be shown experimentally that the sum of all the angles which can be drawn about a point in a plane is 360°, and that the sum of the angles of any triangle is 180°. Elementary astronomical work will show the need of such subdivision.

Draw an equilateral triangle, cut off the corners (angles) and apply them to each other. Denote the magnitude of one of the angles by x. What will denote the sum of all three? This sum being also 180°, we may write,

$$3x = 180^\circ.$$

What then is the value in degrees of one of the angles of the equilateral triangle?

Draw an isosceles right triangle and denote one side by x and the hypotenuse by y. What is the perimeter? The area? Measure the sides and express the perimeter in inches. Write an equation between your two numbers representing the perimeter. What is the area of the triangle? If the triangle has been drawn on cross-ruled paper, count the number of square inches or square tenths of inches. Write an equation between your two values for the area. Can you find the value of y?

This latter problem shows how two unknown numbers may enter a problem; for suppose it were required to find the sides of such a triangle whose perimeter is to be 13 inches and whose area must be 8. The equations would then be:

$$2x + y = 13, \text{ and } \frac{x^2}{2} = 8, \text{ or } x^2 = 16.$$

5. The equation represented graphically.

In plotting the values of x and y it is not necessary to lay them off on the respective axes. It is obvious that y-values may be laid off parallel to the y-axis from the *x-axis*.

One of the fundamental laws of motion is symbolized by $f=mx$, f, force, m, mass, and x, acceleration.

For uniform motion we have $S=Vt$, where S denotes the space described, V the velocity, and t, the time.

In the theory of stresses and strains we have $P=AS$ and $e=ls$. Explain symbols.

For the pressure in pipes and cylinders we have $P=pld$. Explain meaning of symbols.

These formulas are typical of the fundamental relations of mechanics of materials and they will be derived and studied for their use in the study of woods, irons, etc.

Let it be noted that they are all (under certain conditions) of the form $y=kx$. Let us study this equation, first in a simpler form; viz.: $y=x$. Plot it.

We shall then study $y=2x$, $y=5x$ and $y=kx$.

Now apply what has been learned to the foregoing practical equations.

Many more general equations will then be plotted and studied graphically, until such equations are understood algebraically and interpreted mechanically and geometrically.

6. The effect of the + and — signs as symbols of operation when followed by the same signs as symbols of quality interpreted graphically.

Pedagogic School

EIGHTH GRADE, MATHEMATICS. In general the work in mathematics of the seventh and eighth grades should be substantially the same in kind and should undertake to secure two different, though related, ideals in education:

I. A connected and comprehensive view of the fundamental facts of arithmetic together with some degree of facility in generalizing from these facts to principles. Such work as this should be begun earlier than here, but it should receive much greater emphasis here than at any earlier stage. The need of a reasonable insistence upon accuracy begins to be felt by the pupil of these grades.

II. Some insight into the subject-matter and methods of the higher mathematics together with a degree of ability on the pupil's part to form a comparative estimate of the merits of the methods of geometry, algebra and trigonometry and those of arithmetic. Pupils may thus be led to see that these higher branches of mathematics should be studied because they furnish easier and more direct means of waging "the conquest of nature" in time and space than does arithmetic. This gives the young pupil an objective, rather than a subjective, reason for the study of these advanced subjects and reasons of the former sort appeal to him much more strongly at this stage of study than do those of the latter sort, such as mental discipline, educative value, etc.

Percentage, Interest, etc., may well be given attention here, though they should be introduced and taught in closest connection with fractions at an earlier stage. The main reason for taking them up here again is that they furnish so many excellent opportunities for generalizing to the broader principles of algebra. In all the work of these grades the pupil should be taught to study the conditions of his problem and to decide what is the simplest course to pursue, for the simplest is always the best—to think his problem out—before he sets about the mechanical work of executing the solution.

SUBJECT-MATTER. The first of these ideals is best realized through the facts of science, geography, sociology, manual training and physical training which teachers and pupils have been gathering and are still gathering at this time.

The work in science will consist of discussions of data furnished by the rain-gauge, the thermometer, barometer, hygrometer, the skiameter and other appliances, most of which will be made by the pupils. The discussions will lay a reasonable stress on accuracy and rapidity of calculation and will insist everywhere on intelligent interpretation of results.

In geography, such questions should be studied as the fall of rivers, lengths of rivers, extent of river basins, areas of continents and countries, lengths of coast lines, carrying power of rivers and winds, percentage of water soaking into the soil after rains, influences of the tides, tides in rivers, rate of motion of free and forced waves in ocean, heat absorbed by atmosphere, variations of heat due to changing obliquity of rays, dependence of obliquity of rays upon the latitude, cause of seasons, the reason why the time of highest temperature is not coincident with the time of greatest obliquity of solar rays. Seasons on other planets.

In the study of the community life of man, or sociology, the arts and industries, the food supply of the race, the agencies of commerce, transportation, navigation, and general distribution of the products of labor will open up a vast field for mathematical work.

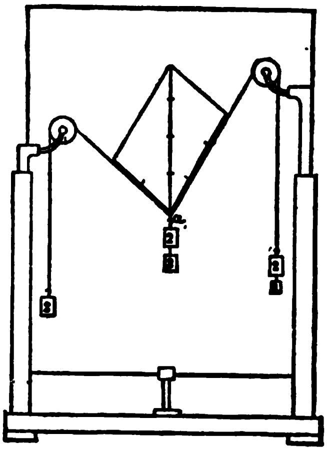
In the manual training department all apparatus will be made in accordance with definite specifications, which must be discussed with reference to the purpose in view by the class and decided upon before beginning, Here it will be clearly seen that mathematical accuracy can never be realized in practice, and that absolute, uncompromising accuracy is important only to the abstract logician. To the individual who expects to use his mathematics it is necessary only that he work safely within practically attainable limits. It needs to be borne in mind that it is sometimes as unmathematical to insist on absolute accuracy as it is to ignore accuracy entirely, unless mathematics be identified with logic.

The measures taken in physical training will be largely used as bases of practical deductions as to the care of the body, the proper kind and amount of training and exercise for each individual and as to the true meaning of proportion and symmetry in regard to the human form.

The second aim suggested above will be worked out through a study of the forces which are continually operative in the environment of the pupil and which he has already begun to feel a desire to understand more fully.

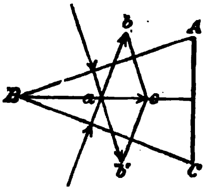
A. Forces acting on a free point.

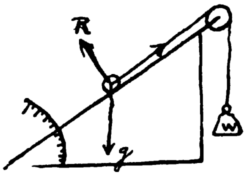
By the aid of an apparatus such as is represented in the accompanying cut, which may be made in the manual training shop, the principle known as the parallelogram of forces may be worked out experimentally. A smooth ring, or small pulley at *a*, will be held at rest, or in equilibrium, when the weights are such that the one at *a* is represented by the diagonal of a parallelogram of which the lengths of the sides represent the side weights. When *a* is at rest lines may be drawn along the cords on a sheet of paper pinned on the board just behind the weights. On these lines lay off lengths to represent the side forces, or weights, and complete the parallelogram. Does the measured length of the diagonal of this parallelogram represent the weight at *a*? Repeat the experiment with different weights at the sides, varying the weight at *a* so as to produce equilibrium. A horizontal board or a table with pulleys at the edges may be used instead of the appa-



ratus here suggested. Extend principle to "polygon of forces."

Show how this principle applies to each of the simple machines—inclined plane, wedge,

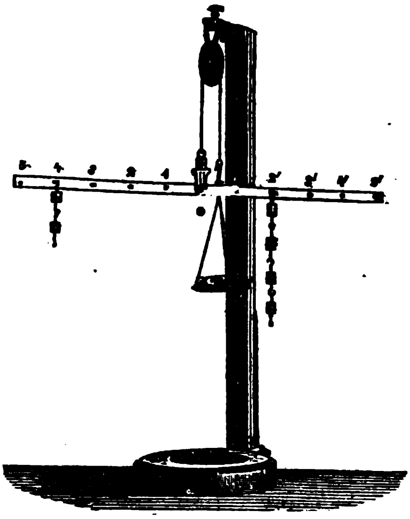




etc. Devise an apparatus for applying weight parallel to base.

B. Forces acting on a free body.

With apparatus like the one here suggested study the action of parallel forces on a body. This brings up the question of moments and the apparatus furnishes a means of studying it experimentally. How is the light thus obtained of value in studying the stability of trees and structures against being overturned by the wind and other forces? This leads to a necessity of studying the center of gravity, which will be taken up next month. Considerable field work in elementary geometry should be done in this grade.



Home Economics

Alice Peloubet Norton

The study of the home and its management finds its justification as part of the school work in the importance of the home as a social factor, in the influence of the home upon character, and in the fact that nearly all the sciences find direct application in home life. The subject in its broadest interpretation embraces the study of the home itself, its evolution, its function, and its relation to other social institutions; the discussion of the problems of the family, including the training of children; the consideration of the house, its relation to the home, its architecture and decoration, and the sanitary conditions which affect the welfare of its inmates. It deals with the whole great food problem from the standpoint of economics, the production of human energy, and the "labor power of nations." The composition, source, and nutritive value of food materials, their chemical analysis, the detection of adulterations, and the calculation of dietaries belong to the subject as legitimately as do the cooking and serving of food.

Clothing in its historical, hygienic, and æsthetic aspects, household expenditure, and the division of the income all find a place in this science of the home.

The purpose of the work offered in this department is twofold. It aims, first, to show to the student the importance of the home and its work, and to arouse interest by giving familiarity with its common processes and their underlying principles; second, to show the value of the work for children, because of the opportunities for self-expression, and for training in community life.

The work is closely interwoven with that of other departments. The development of the home and its arts belongs to history, while geology, chemistry, physics, and bacteriology are the fundamental sciences upon which sanitation is based. Geography and nature study show us the distribution and structure of the food plants. The course in art includes the decoration of the house and the study of the textile fabrics.

The first year's work will deal especially with the first of the three main groups — food, clothing, and shelter. The outline for October is as follows:

PEDAGOGIC SCHOOL: I. Separation of different food principles from fruits and grains.

Water from fruit; mineral matter from grains; gluten from wheat; starch from wheat; sugar from fruit; fat from corn.

Substances isolated, to be dried when possible, and kept for future examination.

II. Classification of foods.

Uses of food. Measure of heat and energy—caloric. Meaning of nutritive ratio; nutrient ratio; food value; balanced ration.

III. Water.

(1) Source. (2) Uses in body. (3) Cookery: (a) Effect of heat. Determination of boiling point, with thermometer. Observation of physical changes. Effect on boiling point of substances in solution. (b) Effect of cold. Freezing point. Effect of substances in solution. Water, ices. (c) Use as solvent, illustrated by making of tea and coffee. (d) Use in furnishing moisture. Stewing of dried fruits. (e) Use as a means of conveying heat to food materials.

References: *Food*, by Church, Chapman & Hall. *Practical Sanitary and Economic Cooking*, Mary Hinman Abel, Lomb Prize Essay; *Chemistry of Cookery*, Chap. I, Matthieu Williams, Appleton & Co.; *Dietetic Value of Bread*, Goodfellow, pp. 1–30, McMillan & Co.; *Food and Its Functions*, Knight, pp. 1–24, Blackie and Son; *Food in Health and Disease*, Yeo, pp. 1–11. Lea Bros.

HIGH SCHOOL: I. Quantitative determination of water in fruits, and comparison of amounts in different varieties.

II. Study of water as in above outline.

For the work in the grades, see outlines under each grade.

Cooking in the Primary Grades
No. 1

Flora J. Cooke

The work outlined below indicates one phase of the social organization of the school. It is in no sense an isolated or special work. It depends not only upon the child's daily observation and experiences in the home, but his social responsibility in this work demands the constant use of the data gathered from his experiments in geography, history, and nature study.

Twice during the month each class of primary children will prepare and serve one kind of fruit, during the lunch period, to some other class in the school.

Before deciding which fruit is best adapted for this purpose, they will experiment, each child stewing or baking a favorite fruit. When the class has compared and tested the results they will decide upon the best product, as the baked apple or apple sauce, and all will prepare and serve this fruit to their guests during the lunch period the following day.

INCIDENTAL WORK: Reading, writing, and number will be an essential part of almost every lesson.

The children will make an account and recipe book. They will estimate the amount and cost of all the materials used. From practical necessity they will learn to weigh and measure accurately. They will constantly study temperature and the effect of increase or decrease of heat in baking or stewing fruits. They will keep careful records of individual experiments in order to discover reasons for their success or failure in result.

They will make work aprons, sleeve covers, holders and towels for their work. They will originate their own rules for working, for cleanliness, care of materials, and the manner of serving their guests.

Cooking is usually placed in the school curriculum in the seventh and eighth grades, where it is purely a girl's study. It is therefore thought best to explain its introduction as a study for both boys and girls into the lowest primary grades in the Chicago Institute.

The reasons are as follows:

1. The work, under the motive given, must immediately influence the ideals and habits of life of the children.

2. It appeals to a fundamental and universal interest of children, and therefore arouses their best efforts.

3. It requires balanced activity of mind and body, and therefore is free from the danger of mental overstrain.

4. The personal, sensuous delight or satisfaction of the child in the food is tempered by his consideration of the comfort of his guests and the natural sharing of his pleasure with them.

5. Finally, the work was placed here because both boys and girls should come to understand, in a natural way, the significance of the simple food principles and values which so strongly influence their lives and physical development.

Art

John Duncan

The work of the Art Department will grow out of, and illustrate, the work of the other departments. It is intended at the same time that the products be utilized as far as possible for the decoration and furnishing of schools, and that objects be made for the use of others, e. g., picture books for the grades.

First Year, High School

Science: Study of proportion and structure of human figure and face. Comparison of human with other animal forms. Autumn landscape.

History: Study of primitive ornament. Invention and application of similar patterns. Illustration of primitive occupations: hunting, fishing, shepherding, agriculture. (No excessive demand will be made for exactness of archæological detail.)

Study of Assyrian and Egyptian Art. An effort will be made to penetrate to the meaning of the art of these peoples, and to re-embody the mythology in original designs.

Geography: Rapid sketches bringing out especial points (notes in form and color) will be made upon the field, and larger, more synthetic drawings expressive of the accumulated experience of the student will be executed afterward in the studio.

Second Year

Science: Autumn landscape. Harvesting of fruit and grain.

History: Study of Roman architecture and ornament. Illustration of scenes from Roman history.

Geography: Study of cloud forms.

Third Year

Science: Autumn landscape. Vegetable and animal life will be painted with a view to the building up a broad conception of the season in the mind of the student.

History: Study of Christian art, Gothic architecture, sculpture, illumination, and the applied arts. Original drawings, paintings, and models of persons and scenes from the Bible story, inspired by Gothic art.

Geography: Study of rock formations.

Fourth Year

Science: Pictures of autumn—landscape and figures.

History: Study of modern art movements. Illustration of the history of the times.

Geography: Representations of racial types in their relation to geographical conditions.

Pedagogic School

The students will go over the ground covered by the grades during this month, doing the work more thoroughly and carrying it further. (See syllabus of grades.)

Speech, Oral Reading, and Dramatic Art

Martha Fleming

The value of knowledge upon any subject is measured by the quality and expansiveness of the emotion aroused. Emotion determines action, and is therefore fundamental in character. In the progress of study there comes a time when the emotion of the individual demands expression, and this spontaneous striving for utterance will invariably take rhythmic form of some kind; it may be in movements of the body, as in children's plays, in the dance, or in pantomime, or it may be in music or in poetry. Each mode of expression has its own particular reactive function: color is realized by painting, form by the plastic arts, complete synthesis by writing. Dramatic art focuses the experiences gained in all the other arts, and combines them into one supreme act. This act necessitates the rapid gathering together of all the experiences and the holding of them in form for a comparatively short period of time. The product is evanescent, and the action therefore correspondingly intense. The picture, the statue, the poem persists, while the product of dramatic art has no enduring quality except as it reacts to develop human character.

It is a mode of expression common in its broader forms to primitive man and to the primitive individual, and in its more complex subtle forms to the most highly organized and fully developed peoples. The child puts himself into certain outside conditions for the purpose of getting certain inside experiences. The dramatic impulse leads him to study the wind, the trees, the life about him, and all the shifting phenomena of nature, by putting himself in their places. He loves to act out in his own person his thoughts about them.

The children themselves demand this mode of expression, and they will be encouraged to study nature, history, and language by personations, pantomimes, and plays; and lest these lose spontaneity and become reduced to set fixed forms, the greatest liberty will be given. The teacher will be helper and director. Use will also be made of dances, costuming, song, speech, oratory, and poetry. Literature is to-day the broadest manifestation of the dramatic instinct, and its expression offers the most complete outlet for roused emotion. It performs the same offices, answers the same needs, that the dance did for the primitive peoples.

The poem *How the Leaves Came Down*, which is presented to the First Grade this month, is chosen with reference to its possibilities of dramatic presentation. The children have been observing the changing autumn leaves. This little poem brings all their observations and impressions together in artistic form. It appeals to the sense of rhythm, to the love of beauty, and to the imagination. It is full of action, which resembles that in the child's own home life. The father, the children, the reluctance about going to bed, the permission to stay a little longer, the last wild frolic, the final going, the white bed-clothes, the sweet good night, and the dreaminess of coming sleep are things the child can understand, because they are a part of his own life. He enters into the life of the leaves by becoming one of them; all his images are cleared up and made vivid. Lessons of love and obedience are unconsciously inculcated. The poetical form is a musical setting, which he learns without conscious effort. At the same time he is gaining skill in the use of his voice, speech, and body, and incorporating beautiful forms of language into his own vocabulary.

This illustrates the thought of the work that will be carried through the different grades. It will vary with the different stages of development. By means of the dramatic instinct the student will come close to the lives of other nations and of other times than his own. In the higher grades the original plays will be better organized, and debates, orations, and the study of great literature intimately related to the subject-matter of study will be part of the month's work. Training in the hearing and production of articulated sounds will be given daily in the lower grades by means of plays and games. The morning and special day exercises of the school will afford ample opportunity for practice in extemporaneous and prepared public speaking.

How the Leaves Came Down

Susan Coolidge

I'll tell you how the leaves came down:
The Great Tree to his children said:
"You're getting sleepy, Yellow and Brown,
Yes, very sleepy, Little Red,
It's quite time you went to bed."

"Oh," begged each silly, pouting leaf,
"Let us a little longer stay;
Dear Father Tree, behold our grief!
'Tis such a very pleasant day,
We do not want to go away."

So just for one more merry day
To the Great Tree the leaflets clung,
Frolicked and danced and had their way,
Upon the autumn breezes swung,
Whispering all their sports among:

"Perhaps the Great Tree will forget,
And let us stay until the spring,
If we all beg and coax and fret."
But the Great Tree did no such thing.
He smiled to hear their whispering.

"Come, children, all to bed," he cried;
And ere the leaves could urge their prayer,
He shook his head, and far and wide,
Fluttering and rustling everywhere,
Down sped the leaflets through the air.

I saw them; on the ground they lay,
Golden and red, a huddled swarm,
Waiting till one from far away,
White bed-clothes heaped upon her arm,
Should come to wrap them safe and warm.

The great bare tree looked down and smiled.
"Good night, dear little leaves," he said,
And from below each sleepy child
Replied, "Good night," and murmured,
"It is so nice to go to bed."

Music

Helen Goodrich

All grades will be chiefly occupied with song-study connected with the subjects of attention in the departments of music, literature, history, and geography, and with the season. In the course of these studies, the time comes when there arises in the child the feeling of beauty—the outcome of a perception of related truth; and this feeling must have expression, or the mind loses a great opportunity for clarification. The intention is to supply the means for this expression in rote-songs. The necessity of broadening the child's musical experience is the second and equally important consideration.

A question must arise at this point as to how far the imitative singing of artistic, i. e., rote-songs, can be valuable as a means of spontaneous expression, at least until the child's technique is easily equal to overcoming the difficulties involved, and the song can be learned quickly. There is evident need of encouraging invention, partly on account of the danger of foisting upon the child a form of expression not fitted to his needs, and partly because no means of self-expression can be safely neglected. The encouragement, and as far as possible the conditions, needful for a development of the inventive faculty will be supplied throughout the school. No definite plans can as yet be formulated, but it may be said that there will be at first no hour set apart for composition; that the shop, the playground, the gymnasium, the field excursions, will afford opportunity for observations of rhythm, the most obvious element of music; and that the inflections of the human voice will furnish one means of approaching the idea of melody. Little songs will be introduced informally into the shop at certain times, and there will be an effort to secure free, if not sustained, attempts at making tunes to fit the moment, either with words or without. All definite musical ideas will be preserved, the crudest receiving its proper recognition, but these will not be dwelt upon further than to record them. They will not be allowed to obscure the growing ideal of beautiful form in the children's minds, nor take the place of the artistic songs in class-singing.

The copying of these tunes from the board will constitute one of the early means of learning staff-notation, and sight-reading, the motive of preserving their own productions and those of other children forming the most natural incentive for the effort. In the upper grades, where very little original work is expected, drill in the writing of music from dictation will be given, always through melody. As far as possible, folk-songs will be used, as supplying the chief deficiency in modern songs—simplicity and directness.

Exercises and studies for securing a more definite comprehension of scale relations and intervals, and of rhythm, will be given in all grades. (See Modern Music Series for the plan of these studies.)

Diaphragmatic breathing-exercises will be given throughout the school. In connection with the singing lessons they will aim chiefly at securing control rather than volume. In the lower grades they will not be emphasized.

The introduction to part-singing will be through rounds and canons, in which all sing the melody, and none of the voices are forced out of their natural ranges.

The German and French folk-songs will be sung in the original, others in translations or with "la." Only two or three will be dwelt upon,—those having a beautiful form—the rest being used incidentally to enhance the interest at the point where they are wanted in the other work.

Special classes will be arranged for backward children, and the prospect of a glee-club among the older boys and a quartette among the girls will be held out.

The training-class will begin systematic voice-work, with some individual instruction. The work this month will include exercises for giving conscious control of the diaphragm, vocal exercises for securing a natural tone-quality, and sight-singing, interval drill, and dictation given in two classes, elementary and advanced.

Hymns and a few simple songs used in the academic school will be sung, but the work will be chiefly technical.

The discussion of standards of taste, and the critical consideration of all songs used, will be a constant factor in this class.

Songs

First and Second Grades: *Harvest Time*, Primer, Modern Music Series; *Gray Rain*, Primer, Modern Music Series; *Rain Song*, Primer, Modern Music Series; *Autumn Song*, First Book, Modern Music Series; *Thank You, Pretty Cow*, Primer, Modern Music Series; *Apple-Tree Song*, Reinecke, Fifty Songs for Children; *Slumber Song*, in English, Modern Music Series.

The Laughing Rill, for sight-singing and notation, Primer, Modern Music Series; *Indian Song*, selected. Game Songs: *Here we Go Round the Mulberry Bush; Warm Hands*, (Old English), Baby's Bouquet (illustrated by Walter Crane).

Third Grade. *Rain Song*, Primer, Modern Music Series; *Sweet October*, Second Book, Modern Music Series; *Oriole's Nest Song*, First Book, Modern Music Series; *Wind Song*, First Book, Modern Music Series, with exercises I. and II., page 95. Sight-Reading Song: *The Weathercock*, First Book, Modern Music Series.

Fourth Grade. Folk-Songs: Greek, Chinese, German, French.

Two-Part Round, Second Book, Modern Music Series; used also for sight-singing and notation work.

Fifth Grade. *Harvest Time*, Second Book, Modern Music Series; *Sweet October*, Second Book, Modern Music Series. Characteristic Puritan Hymns; *Two-Part Round*, Second Book, Modern Music Series; used also for sight-singing and notation.

Sixth Grade. *Harvest Time*, Second Book, Modern Music Series; *Sweet October*, Second Book, Modern Music Series; *Sea Horses*, with Suggestive Studies, Second Book, Modern Music Series; *Chinese Airs and Ancient Hymns*, October COURSE OF STUDY; *Two-Part Round*, Second Book, Modern Music Series.

Seventh Grade. *Harvest Song*, Songs of Life and Nature; *Corn Song*, Third Book, Modern Music Series; *September Gale*, Songs of Life and Nature; *Happy Farmer*, Third Book, Modern Music Series; Songs on page 126, Third Book, Modern Music Series.

Eighth Grade. *Harvest Song*, Songs of Life and Nature; *Corn Song*, Songs of Life and Nature; *September Gale*, Songs of Life and Nature; *The Brook*, with Studies, Second Book, Modern Music Series; *Nile Boat Song*, October Course of Study; Songs, page 126, Third Book, Modern Music Series.

High School

Harvest Song, Songs of Life and Nature; *To-day* (Text by Thomas Carlyle), Songs of Life and Nature; *Ye Merry Minstrels* (Old English Round), Third Book, Modern Music Series; *Spirit of Summer-Time*, with Study, Third Book, Modern Music Series. Hymns: *Awake, My Soul*, Handel; *The King of Love*, Dykes.

Training School

Songs selected from those used in the Academic school. Text-books: Modern Music Series, Primer, First, Second, and Third Books, Songs of Life and Nature, Eleanor Smith.

Manual Training

Ira M. Carley

Cora Champlin

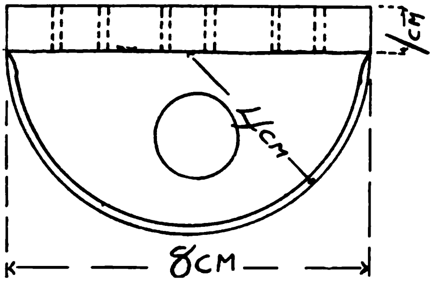
It is intended that a large part of the handwork done in the school shall be directed either toward supplying needs arising in the various occupations of the school, or to the furnishing and decoration of the school-rooms.

In this, the first month of the school year, the work is almost entirely of the former character, as there are several pieces of apparatus needed at once for the work in nature study, art, and the applied arts.

In case the same object is to be made by two or more grades the construction of the object is adapted as nearly as possible to the capability and experience of each grade.

Professional Training Class

Handwork: Construction of apparatus for Nature Study.

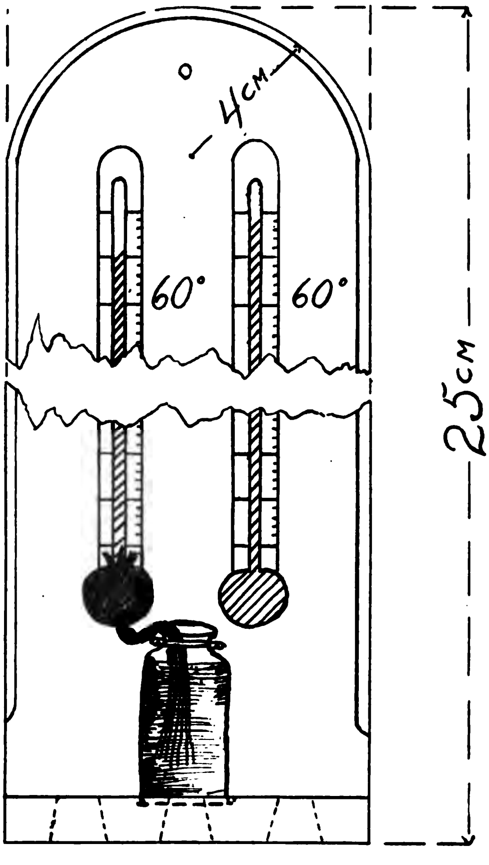


NOTE. — In order to give facility in the use of the metric system of measurement the dimensions of these pieces of apparatus will be given in metric units.

Mechanical Drawing: Orthographic projection applied to working drawings.

Designing: Preliminary drawings for a piece of woodwork for a Christmas present.

Theory: The Physical Basis of Manual Training.



HYGROMETER.

Academic School

First Grade: Canvas-covered frame for stretching and holding water-color paper.

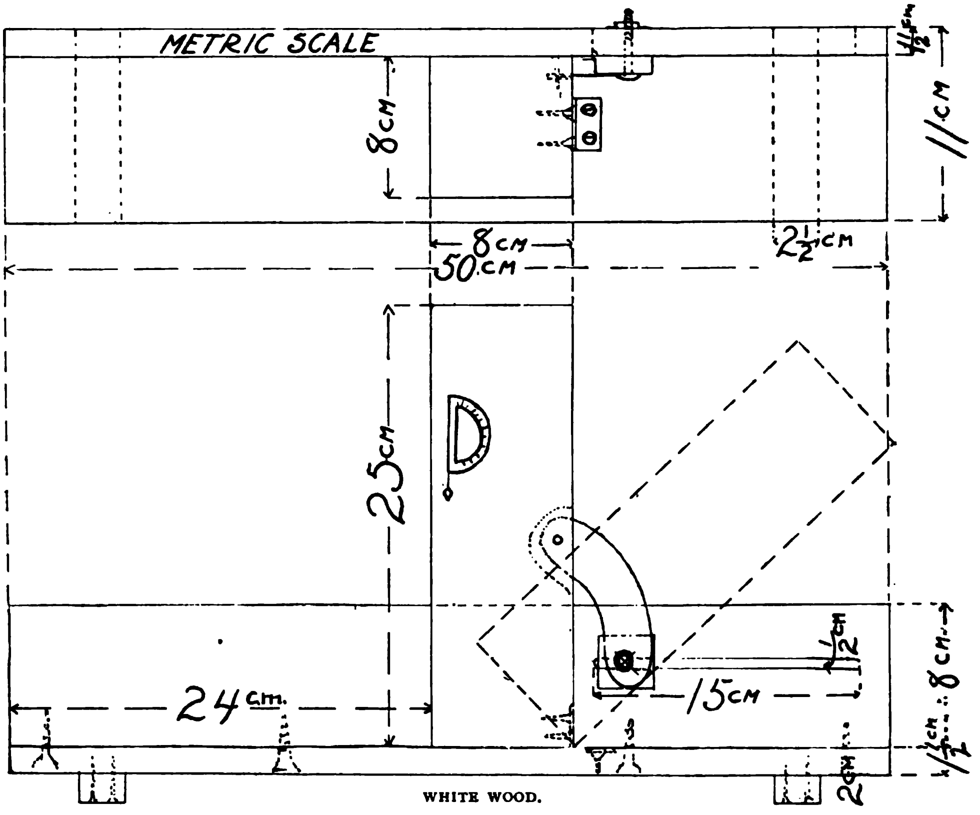
Material, white pine, ⅝ inch thick; poplar, ¼ inch.

Dimensions of frame, 14 inches by 10 inches.

Directions: Prepare two pieces, 14 inches by 1 inch by ⅝ inch, and two pieces 8 inches by 1 inch by ⅝ inch.

Nail the two long pieces upon the ends of the shorter pieces, making rectangle 14 inches by 10 inches. Prepare strip of ¼-inch white-

THE SKIAMETER.



wood 18 inches long and 1 inch wide. Use this strip for braces for the corners (laying off 2 inches from each corner on each edge of the frame). Nail the strip in place first. Then saw off, using the edge of the frame as a guide in sawing the miter. Cover the frame on one side with heavy cotton cloth. Paint canvas.

Second Grade: Loom like drawing given below, except that the frame is 15 inches by 11 inches, and the upright pieces are simply nailed to the inside corners of the frame without being cut out to bring their outside surfaces even with the outside of the frame.

Third Grade: Painting stretcher. White pine, ¾ inch thick. Dimensions, 14 inches by 10 inches. Strips 1 inch wide. Made with half-lapped joints, glued and nailed.

Fourth Grade: Loom.

In place of the harness and heddles use a piece of stiff, tough cardboard (jute board), 10½ inches by 5 inches, inclosed in a thin wooden frame. Saw off in the center of this rectangle of cardboard another rectangle 9½ inches by 3½ inches. Divide this, crossing at right angles to long edge with slits ⅛ inch wide, spaced ¼ inch apart. In the middle of each ¼ inch space make a hole about 1/16 inch in diameter. In setting up the loom, alternate threads of the warp pass through slit and hole, fastening on the stationary rod, and rolling up on the other one.

Fifth Grade: Colonial loom; one loom to be made by whole grade. Painting stretchers, 17 by 14 inches, ⅞-inch pine. Half-lapped joints; 1½-inch strips.

Sixth Grade: Platforms for use of primary grades (first and second) at Manual Training benches.

Dimensions, 24 by 14 inches by 5 by 4 inches; ⅞-inch pine.

Seventh Grade: Painting stretchers. 17 by 14 inch pine. Mitered joints; 1½-inch strips.

T-squares, 22 inches long. (See July COURSE OF STUDY for plans and dimensions, except length.) Wood: oak or cherry.

Eighth Grade: Apparatus for Nature Study: Skiameter, hygrometer, insect-drying board. (Two or three of each.)

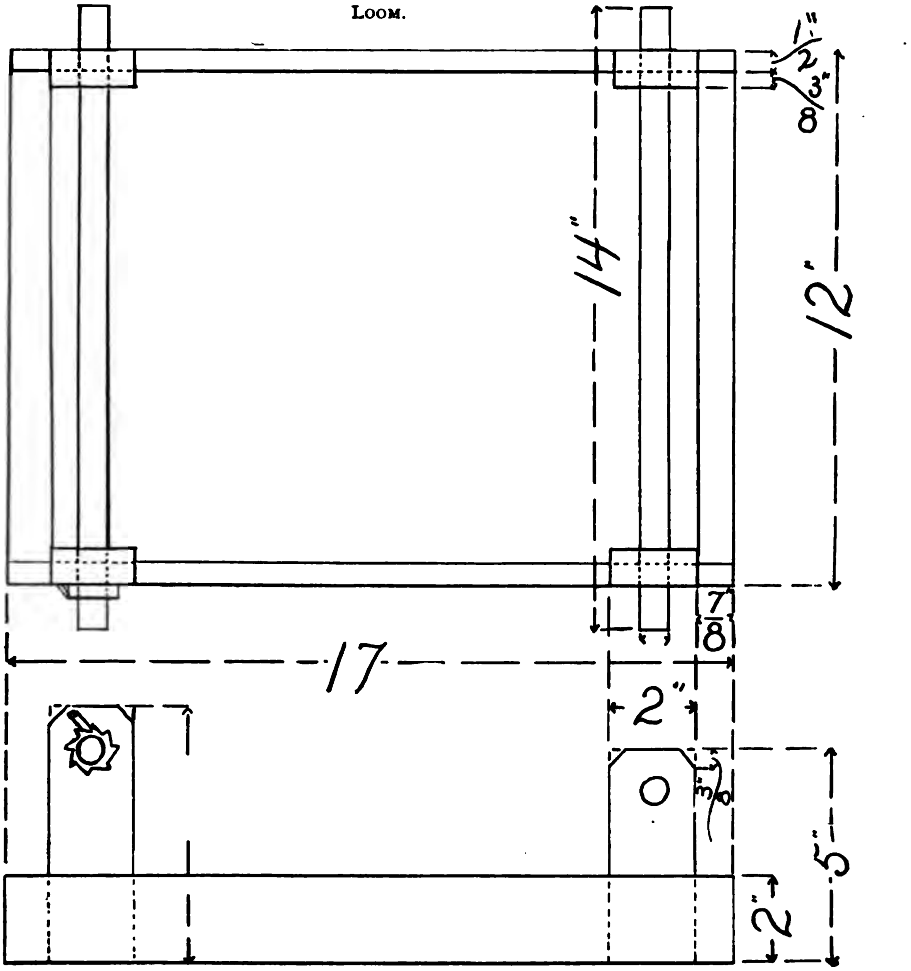
Drawing Boards: See July number of COURSE OF STUDY for plan and dimensions.

Drawing: Plans for Christmas presents.

High School: Science Apparatus. Clay modeling tools for use of school. T-squares and triangles.

Drawing: Designs and plans for furniture for teachers' rest-room and for lunch-room of new building.

LOOM.



Physical Training

Carl J. Kroh Caroline Crawford

Physical training will be taught systematically and thoroughly from the Kindergarten through the High School.

Every teacher in the Chicago Institute will be practically an assistant to the specialists in charge of this department. In all study and recitation the closest attention will be given to physical exercise and all exercises will be correlated with the other work of the school. In manual training, music, oral reading, and in constructive work of all kinds the normal development of the body will be kept steadily in view.

The physical training proper, not immediately connected with subjects of study and expression, will be of two kinds, concerted and individual. Pupils who, through some bodily defect or weakness, are not equal to concerted work will have individual and corrective work. Athletics of all kinds, plays and games, under the direction of experienced trainers, will form part of the afternoon program.

The test of physical training will be increase of self-control, of power to study, to reason, and to express thought.

Measurements and Examinations: It is necessary as a starting-point to determine the type of the body to be developed and trained, whether it is above or below the median for age and sex; what the proportions are; how symmetrical it is, and how strong in different parts; where it is weakest and where strongest. (As far as practicable such examinations will be carried out in grades and professional classes.)

The following measurements are taken to discover these points:

Date

Age			Depth Chest		
Weight			" Abdomen		
Height Standing			Breadth Head		
" Sitting			" Neck		
" Knee			" Shoulders		
" Pubic Arch			" Waist		
" Navel			" Hips		
" Sternum			" Nipples		
Girth Head			Shoulder-Elbow R		
" Neck			" " L		
" Chest			Elbow-Tip R		
" " Full			" " L		
" Ninth Rib			Length Foot R		
" " Full			" " L		
" Waist			" Horizontal		
" Hips			Stretch of Arms		
" Thigh R			Capacity Lungs		
" " L			Strength Lungs		
" Knee R			" Back		
" " L			" Legs		
" Calf R			" Chest		
" " L			TB " Up. Arms		
" Ankle R			RL " Fore Arms		
" " L			" Total		
" Instep R			Development		
" " L			Condition		
" Up. Arm R.			Vision		
" " L			Hearing		
" Elbow R			Pilosity		
" " L			Color Hair		
" Fore Arm R			" Eyes		
" " L			Temperament		
" Wrist R					
" " L					

No.................. Place..................................

Name...

Class.................... Department..........................

Occupation...

Born.................... at......................................

Nationality { Father.................. Mother..................

His father.................. Her father..................

His mother.................. Her mother..................

Occupation of father..

Father died of...

Mother died of...

Most resemble..

General health...

Hereditary diseases...

Have had of the following diseases those checked (✓):

Gout	Rheumatism	Skin Eruptions
Boils	Dyspepsia	Liver Complaint
Piles	Dysentery	Bilious Attacks
Quinsy	Bronchitis	Chronic Diarrhea
Asthma	Pneumonia	Spitting of Blood
Pleurisy	Neuralgia	Bleeding at Nose
Jaundice	Paralysis	Shortness of Breath
Dizziness	Varicose Veins	Palpitation of Heart
Sleeplessness	Habitual Headache	Colds in Head or Throat

Habitual Constipation Enlarged Glands in Neck

Injuries, etc.

..............................EXAMINER.

PHYSICAL DEFECTS: Defects of different parts of the body are noted, for with the majority both of adults and children in school some slight variation from the normal body must be overcome. The defects most frequently observed are drooping head, flat chest, uneven shoulders, hollow back, high hip, and curved spine.

NUTRITION AND ASSIMILATION: The blood tests reveal the possibility of growth under individual conditions of nutrition and hygienic environment. It is important to study the amount and kind of food in attempting to develop the individual.

SENSE TESTS: Vision and hearing are factors in both mental and physical development. Weakness in senses may react to produce weakness of the whole body.

FATIGUE: Mental and physical fatigue is watched through the dermal sensibility. Tests illustrating this point will be printed in future numbers of the COURSE OF STUDY.

Outline of Course

First Grade: Emphasis on exercises, especially of the larger groups of muscles, and regulation of breathing. Promotion of growth through the stimulation of breathing and circulation in exercise in light and air; recreative form of exercise. (Avoid any form of exercise for strength, even in the smaller muscles, in order not to consume the material necessary for growth; avoid also any demand upon the young nerves through premature training in that direction.)

PLAYS AND GAMES: For testing, developing and sharpening the sense-perceptions. Sight: differentiation of (*a*) form; (*b*) color. Hiding and seeking objects. Hearing: distance, direction of sound. Ruth and Jacob. Blind Man's Buff. Feeling (touch, eyes bandaged); distinguishing objects according to form and weight. Guess who? Strike-a-Mark.

Second Grade: Incentive to growth and blood-formation, as above. Strain of muscle avoided in consideration of the growing process.

PLAYS AND GAMES: Imitation games, based on sense-perceptions. Adam Had Seven Sons. Lame Peter, etc. Add: Sack and ball tossing and catching.

Third Grade: Importance of improved bearing and carriage (improved holding power); cultivation of poise; erect position in address. Promptness in response. Accuracy in execution of combinations of simple exercises in free gymnastics.

PLAYS AND GAMES: Add: Short, competitive games, as: First in, first out; Steeplechase, etc.

Fourth Grade: Importance of correct posture concepts in varied combinations of movements. Light to medium exercises for endurance — running, apparatus gymnastics (rhythmic series of similar recurring movements, as "traveling"), never to the point of fatigue.

PLAYS AND GAMES: To lower reaction time between definite sense-perceptions and definite actions. Pump-sack. White and Black.

Fifth Grade: Improvement of volitional control through effort in new coördination problems — free and apparatus gymnastics. Special adaptation of running and jumping exercises; moderately increased demands. Preference for the more active running games. Training for pleasure in action.

PLAYS AND GAMES: Add: "Antagonistics" in groups, employing apparatus, as: poles, ropes, etc. (like orders, without individual distinctions).

Sixth Grade: Development and practice of the characteristic forms of apparatus work— preparation for exercises of skill. Training for dexterity. Agility, alertness, cultivated in the practice of games; importance of forms leading to the more active outdoor games. Systematic marching, running, and jumping exercises with increased demands for endurance. (Avoidance of over-strenuous efforts.)

PLAYS AND GAMES: As above. Ability to recognize advantages and to follow most practical procedures. Reaction of one of several sense-perceptions through most practical action suggested. Quick discernment, judgment. Touch-Ball.

Seventh Grade: Importance of heart and lung action; moderately increased demands in apparatus work; lighter "theme work." Endurance: moderately sustained activity (*i. e.*, rhythmic, much increased activity). (To be avoided: real strain; mere ornamental and aimless drill.)

PLAYS AND GAMES: As above. Add: Three-high. Mount-Ball. Hand-Ball.

Eighth Grade: Exercises of skill on apparatus; outdoor athletics. Training for dexterity and pleasure in action. Outdoors: speed over short courses: running; endurance, long distances (moderately slow and fast); walking and running, with careful increase of duration. (Always avoid strenuous efforts leading to disturbance of breathing and circulation.)

PLAYS AND GAMES: Add: "Antagonistics"—team-work (like and unlike orders). Practice of the higher organized games in simplified form.

High School

I. APPARATUS GYMNASTICS: Exercises for dexterity, involving quick coördination and leading to skill and control. Springing exercises, as jumping and vaulting, with especial attention to execution and form, and to the avoidance of over-exertion.

GAMES: Indoor baseball, basket ball, relay racing, games of alertness, swimming, rhythmic exercises to improve grace and ease of movement, dancing calisthenics.

II. APPARATUS GYMNASTICS: Exercises for strength and skill; increased demands in coördinate activity in various combinations of typical forms, leading to endurance. Training for track and field exercises; walking, running, jumping, high and broad. Swinging and hurling of grip-balls and light weights; ball throwing. Dancing; swimming.

III. GYMNASIUM AND FIELD WORK: Training for condition; prescribed work; use of developing appliances. Practice of special forms; pole vaulting; sprint races, hurdle practice, throwing hammer, putting shot. Gymnastic games. Military exercises; stick fencing, foil fencing. Dancing; swimming.

IV. GYMNASIUM, FIELD, AND TRACK WORK: Contests between gymnastic and athletic teams and clubs. Competitive forms of exercise: Apparatus gymnastics; field and track athletics; military exercises; fencing, etc.; games and sports; football, baseball. Swimming; water sports.

Greek and Latin

Allen W. Gould

Students will begin the acquisition of Greek and Latin in the natural way of reading, writing, and speaking the simplest and most common words and sentences. The vocabulary will be drawn in part from the Roman home and Forum, army and navy, and the Greek assemblies and theaters, so that it will come as the result of the study of Greek and Roman life. The following reading lessons will be read this October, and with each lesson the student will have many oral and written exercises based upon the printed material. Where several references are given on the same subject, different pupils will have different topics assigned, and each pupil will look up his own subject and report to the whole class, so that all may have the benefit of his work.

GREEK,—HIGH SCHOOL, FIRST YEAR. The students will continue their investigation into Greek Life by studying Xenophon's Anabasis, probably reading the first two chapters in October. They will look up *Xenophon* and *Persia* in the dictionaries and encyclopedias, and *Arma* and *Exercitus* in Harpers', Smith's and Seyffert's dictionaries, and read Chapters 69 and 70 in Grote's History of Greece.

HIGH SCHOOL, SECOND YEAR. The pupils will take up the life of Socrates by studying the Memorabilia of Xenophon and the Apology, Crito and Phædro of Plato. They will begin with the Memorabilia, reading the first three chapters in October. They will look up *Socrates* in Harper's and Seyffert's Classical Dictionaries, and Smith's Dictionary of Biography, and in the encyclopedias. They will also begin to read chapter 68 in Grote's Greece, and Chapter 2 of Book 5 in Curtius' Greece.

HIGH SCHOOL, THIRD YEAR. The students will devote this year to a study of Greek Mythology and Religion as found in Homer's Odyssey. The first book will be read in October, and the pupils will also look up *Homer* in Harper's, Seyffert's and Smith's Dictionaries and in the encyclopedias, as well as in Murray's History of Greek Literature and Mahaffey's Greek Classical Literature, Vol. I.

HIGH SCHOOL, FOURTH YEAR. In the fifth year the pupils will study the character and influence of the Athenian stage. They will read about four hundred lines of the Antigone of Sophocles in October, and will also look up *Sophocles* and the *Theatre* in Harper's, Smith's and Seyffert's Dictionaries, and read Chapters 9, 10, and 11 in Blümner, and Section 30 in Guhl and Koner, and the chapter on the Theatre in Garder and Jevon's Manual of Greek Antiquities.

LATIN, — HIGH SCHOOL, FIRST YEAR. This year will be devoted to a study of the Roman Republic the first century before Christ as found in Sallust and Cicero. The students will begin with Sallust's *Conspiracy of Catiline*, reading about forty chapters in October. The pupils will also read and report to the class on *Sallust*, *Cæsar*, *Cicero*, and *Catiline* in Harpers', Smith's and Seyffert's dictionaries, and in the Encyclopedias. They will also read Chapter V in Strachan-Davidson's *Cicero and the Fall of Rome;* Chapter V in Warde-Fowler's *Julius Cæsar and the Foundation of the Roman Empire;* and Chapter II in Froude's *Cæsar.*

HIGH SCHOOL, SECOND YEAR. The study of the imagination of the Romans as shown in the poets Catullus, Lucretius, Tibullus and Ovid. In October the pupil will read Catullus, 1, 2, 3, 4, 9, 27, 31, 44, 45, 46, 84, 101, and begin 64. The students will look up *Catullus* in Harper's, Smith's and Seyffert's dictionaries, and the encyclopedias, as well as in Cruttwell's *History of Roman Literature.* In reading 64, *Ariadne* will be studied in the dictionaries, and in the reproductions of works of ancient art available.

HIGH SCHOOL, THIRD YEAR. In the third year the study will be the Roman religion as seen in Virgil's poems. In October the students will read the fourth Eclogue and then start their work in the first book of the Æneid. They will also look up *Virgil* in the dictionaries and encyclopedias, and in Cruttwell.

HIGH SCHOOL, FOURTH YEAR. This year will be taken up in reading what is best in the Roman life under the Empire and will be introduced by reading a few poems of Horace. In October the pupils will read Epode 16, 17 and 2; Odes, I, 14 and 37; II, 5; I, 34 and 9; II, 3, 7 and 14; III, 2, 3 and 13.

The students will also learn about *Horace* from the dictionaries and encyclopædias, and Cruttwell, as well as from Merivale's *History of the Romans under the Empire,* Chapters 30, 31, 32, 33, and 41.

Greek Reading Lessons.

I.

Ὁ ἄνθρωπος φύσει πολιτικὸν ζῷον ἐστί. Ἀριστοτέλης.

οἱ Ἀθηναῖοι ἦσαν ἐλεύθεροι. οἱ Κορίνθιοι καὶ οἱ Θηβαῖοι ἦσαν ἐλεύθεροι. οἱ δοῦλοι οὐκ ἦσαν ἐλεύθεροι. οἱ Ἀθηναῖοι κύριοι τῶν δούλων ἦσαν. οἱ νόμοι κύριοι τῶν Ἀθηναίων καὶ τῶν Κορινθίων ἦσαν. ἆρα οἱ νόμοι δίκαιοί εἰσιν; ἆρα ἐλεύθεροι ἐσμεν; ἆρα οἱ νόμοι εἰσὶ κύριοι τῶν ἀνθρώπων; ἆρα οἱ νόμοι δίκαιοί εἰσι;

Look up *Aristotle* in Harper's and in Seyffert's Classical Dictionaries. Find the location of Athens, Thebes, and Corinth.

II.

Καλὸν φέρουσι καρπὸν οἱ σεμνοὶ τρόποι. Μένανδρος.

ὁ διδάσκαλος τοὺς τῶν Ἀθηναίων υἱοὺς διδάσκει ἐν τῷ διδασκαλείῳ. οἱ σοφοὶ ἄνθρωποι ἔχουσι διδασκάλους τοῖς υἱοῖς. ὁ παιδαγωγὸς ἄγει τὸν τοῦ Ἀθηναίου υἱὸν εἰς τὸ διδασκαλεῖον. ὁ παιδαγωγὸς τὸν τοῦ νέου κυρίου στύλον φέρει. ὁ παιδαγωγὸς εστι δοῦλος. ὁ διδάσκαλος ἐστιν ἐλεύθερος. οἱ υἱοὶ τὸν μισθὸν τοῦ διδασκάλου φέρουσι. ἆρα ὁ παιδαγωγὸς ἢ ὁ διδάσκαλος τοὺς τῶν Ἀθηναίων υἱοὺς διδάσκει;

Look up *Menander*, *Ludus*, *Pedagogue*, and *Education* in Harpers' and Seyffert's Classical Dictionaries; also read Chapter III in Blümner's *Home Life of the Ancient Greeks.*

III.

Οὕτω δημόσιον κακὸν ἔρχεται οἴκαδ' ἑκάστῳ. Σόλων.

ὁ Ἀθηναῖος ἐστι τυφλός. ὁ Ἀθηναῖος πέμπει τὸν δοῦλον εἰς τὸ ἰατρεῖον. ὁ δοῦλος τὸν μισθὸν τῷ ἰάτρῳ φέρει. ὁ ἴατρος τὰ φάρμακα πέμπει ἐκ τοῦ ἰατρείου. τὰ φάρμακα τοὺς ὀφθαλμοὺς τοῦ τυφλοῦ οὐκ ἰάονται. εἰς Ἐπίδαυρον ἔρχεται ὁ τυφλός. ἐν Ἐπιδαύρῳ ὁ θεὸς Ἀσκληπιὸς τὸν ναὸν ἔχει. ὁ τυφλὸς δῶρον τῷ θεῷ φέρει καὶ ἐν τῷ ναῷ καθεύδει.

Look up *Medicus* in Harper's and Smith's Classical Dictionaries, and read Chapter VII in Blümner's *Home Life of the Ancient Greeks.* Look up *Solon* in Harper's and Seyffert's Dictionaries.

IV.

Ἀνάγκῃ δ' οὐδὲ θεοὶ μάχονται. Σιμωνίδης

ἀνάγκη ἦν τοῖς υἱοῖς τῶν Ἀθηναίων μανθάνειν μουσικὴν καὶ γυμναστικήν. οἱ διδάσκαλοι τοὺς τῶν Ἀθηναίων υἱοὺς ἐδίδασκον γράφειν καὶ ἀναγιγνώσκειν. τὸ Ἀθηναῖον διδασκαλεῖον ἦν οὐ θερμόν. ὁ Ἥλιος ἐν ταῖς Ἀθήναις ἦν θερμός. οἱ Λακεδαιμόνιοι τοῖς βαρβάροις ἐν Θερμοπύλαις ἐμάχοντο. οἱ υἱοὶ τῶν Λακεδαιμονίων ἐμάνθανον μουσικὴν καὶ γυμναστικήν. αἱ Λακεδαιμόνιαι κόραι ἐμάνθανον τὴν γυμναστικήν. αἱ Ἀθηναῖαι κόραι ἐμάνθανον οὔτε τὴν μουσικὴν οὔτε τὴν γυμναστικήν.

Look up *Musica* and *Simonides* in Harpers' Classical Dictionary; also read Chapters VIII and IX in Blümner's and Section 51 in Guhl and Koner's *Life of the Greeks and Romans.* Where are Lacedæmon and Thermopylæ?

V.

Τὸν λόγον εἴδωλον εἶναι τῶν ἔργων ἔλεγεν. Σόλων.

ὁ παιδαγωγὸς τὴν τοῦ νέου κυρίου λύραν εἰς τὸ διδασκαλεῖον ἔφερε. ὁ υἱὸς τοῦ Ἀθηναίου ἐμάνθανε τὴν λύραν τοῖς τε δακτύλοις καὶ τῷ πλήκτρῳ κρούειν. ἡ Ἀθηναία κόρη ἐμάνθανε οὐ κρούειν ἀλλὰ ὑφαίνειν τε καὶ κλώθειν. ἀρα ἡ Ἀθηναία κόρη ἐπιστολὴν τῷ στύλῳ γράψει καὶ πέμψει αὐτὴν εἰς τὸν ἀδελφὸν; ὁ δοῦλος ἔφερε τὴν ἐπιστολὴν εἰς τὸν τοῦ κυρίου υἱὸν.

Look up *Tela* in Harpers' and Smith's Dictionaries, and *Weaving* in Seyffert's. Read Chapter IV in Blümner and section 48 in Guhl and Koner.

VI.

Τὸ δίκαιόν εστι διττὸν, τὸ μὲν ἄγραφον τὸ δὲ κατὰ νόμον. Ἀριστοτέλης.

ἀνάγκη ἦν τοῖς νέοις Ἀθηναίοις μαχεσθαὶ μανθάνειν. οἱ μὲν πελτασταὶ πέλτας οἱ δὲ τοξόται τόξα εἶχον. οἱ ὁπλίται εἶχον οὔτε πέλτας οὔτε τόξα. οἱ τοξόται καὶ οἱ πελτασταὶ καὶ οἱ ὁπλίται ἦσαν στρατιώται. οἱ στρατιώται ὅπλοις ἐμάχοντο. τὰ ὅπλα αἱ ἅμαξαι ἔφερον σταθμὸν ἕνα, παρασάγγας πέντε, καὶ ἐνταῦθα ἔμεινον ἡμέρας πέντε.

Look up *Arcus* and *Clipeus* in Harper's and Smith's Dictionaries, and read Chapter XIII in Blümner and section 54 in Guhl and Koner.

Latin Reading Lessons.

I.

Discite justitiam. Vergilius.

Schola est in tabernis. Schola est hora prima. Virginia in Scholam it. Virginia litteras discit. Puellæ litteras discunt. Puella Romana in tabellis litteras scribit. Ferula in schola est. Scholæ interdum in viis sunt. Puellæ letteras Græcas discunt. Romanæ poetas interdum discunt. Serva in Scholam tabellam puellæ fert. Justitiamne puellæ Romanæ discunt?

The pupils will look up *ludus*, *taberna*, *tabella* in Harpers', Rich's and Smith's Classical Dictionaries, and *Virginia* in Harper's Classical Dictionary and Smith's Dictionary of Biography. They can also consult the Excursus on *Education* in Becker's Gallus, and read a part of Macaulay's *Virginia*.

II.

Cedant arma togæ. Cicero.

Magister bonus pueros Romanos docet. Servus in scholam tabellam pueri fert. Pueri Romani litteras Græcas discunt. Justitiamne pueri Romani discunt? Puer Romanus togam prætextam gerit. Civis Romanus togam gerit. Nec Gallus nec servus togam gerit. Gallus bracas gerit Romani Galliam transalpinam bracatam. Galliam cisalpinam togatam appellant. Matrona Romana stolam gerit. Supra stolam gerit matrona pallam.

The students will look up *braca*, *stola*, *toga* and *tunica* in the Classical Dictionaries, and consult the Excursus on the *Dress* of Men and Women in Becker's Gallus, and Section 95 in Guhl and Koner's Life of the Greeks and Romans.

French

Lorley Ada Ashleman

The French language, the study of which is begun in the third grade, is taught on the same principle as English, German, Latin, and Greek. It is correlated with all subjects of study. The pupils use the language, both spoken and written. For the primary grades the work in French is correlated almost entirely with handwork, games, and simple gymnastic methods. These represent the strongest interests of the little child. In connection with cooking, all the necessary directions are given in French by the teacher; and the children are taught to associate the dishes, cooking utensils, etc., with their French names. Through the constant recurrence of the necessity for lighting the fire, boiling water, setting the table, etc., the vocabulary associated with the action and objects involved in these operations becomes firmly fixed in the child's mind. In the same way the play instinct is utilized, and games chosen which involve a great deal of action and the repetition of simple phrases. Stories are dramatized for the amusement of the other children, and reproduced for the same purpose with paints and clay.

THIRD GRADE. The work of this grade is correlated with sewing and geography. Children will hem towels to be used in the school. In connection with geography, excursions will be taken to South Water street and elsewhere, in order that the children may acquire some idea of Chicago as a commercial center. On the excursions to South Water street the fruits and vegetables will be purchased for the use of the classes engaged in cooking.

FOURTH GRADE. French lessons in this grade are correlated with the cooking. The operations at the beginning are necessarily simple, and include the making and serving of such dishes as apple-sauce, etc. "La Bergere," a little French song, will be memorized and sung as a part of the entertainment for the guests whom the children serve with lunch.

FIFTH GRADE. French is taught in connection with the study of the distribution of seeds by winds, water, and animals.

Children make collections of seeds for the spring planting, and construct boxes in which to keep them.

In connection with man's part in the distribution of seeds the following stories will be told and dramatized: "*How Potatoes Were Introduced into France*," and "*The Introduction of Tobacco into England*."

SIXTH GRADE. In this grade the work is based on Nature Study. Children will study temperature, rainfall, clouds, and cloudiness, humidity, winds, fogs, frost and dew, and the effects of these varying conditions upon vegetation. The use of French idioms is introduced in this connection. The children of this grade will construct throughout the year, beginning with October, French calendars for the use of the school. A French song on the seasons will be taught.

SEVENTH GRADE. Geography and Nature Study is the basis of seventh grade work. The children study the autumn aspects of the fields and woods, and reproduce with colors the most attractive autumn scenes or flowers for the use of the children in the sixth grade, who are making calendars. In the geography a study will be made of the Chicago and Illinois rivers, introducing sketches of La Salle, Marquette, and Joliet. These stories may be dramatized.

EIGHTH GRADE. Water and waterways. Study of Chicago River as a type and of the water-shed at Oak Park. There will be excursions to Oak Park and to the Desplaines River. Drainage Canal: Its function; the effect its construction may have upon the commerce of Montreal.

The High School pupils will present to this class, in the form of reading matter, any interesting information they may have collected on a visit to a French village near Kankakee.

French Reading Lessons.

Aventures des Premières Pommes de Terre en France.

Les Espagnols constatèrent lors de leur conquête du Nouveau Monde que la pomme de terre constituait une des principales ressources alimentaires des régions de Quito. Ils l' introduirent en Espagne en 1553. "La Chronique du Péru" en fait mention sous le nom de "battala" ou "papa."

De l'Espagne la pomme de terre passa en Italie, et de là elle fut apportée en Belgique.

Le sieur de Waldheim, préfet de Mons (51 kilomètres s. o. de Bruxelles) envoya ce légume, l' estimant un cadeau bien rare, au roi de France.

Henri II. fut sensible à cette attention et en donna la preuve en faisant préparer un festin dans lequel la pomme de terre prit la place d'honneur.

Tous les grands seigneurs du pays y furent invités pour faire la connaissance de ce légume merveilleux. Une certaine agitation se manifesta parmi eux à l'apparition de la pomme de terre.

Le roi fut le premier d'en goûter. Une bouchée, deux bouchées et l'on passa le plat sous silence. Tous les courtesans imitèrent le roi: personne n'osait être le premier à passer jugement sur la pauvre pomme de terre.

En conséquence de cette aventure le monarque fit jeter toutes les pommes de terre hors des fortifications de la ville.

Mais pour quelle raison la pomme de terre tomba-t-elle ainsi en disgrâce? Les Français aiment bien les salades et le chef de cuisine ne les avait pas fait bouillir avant de les servir dans une mayonnaise délicieuse.

Une quinzaine plutard quelques soldats

bivouaquaient hors de la ville de Paris. Ils étaient assis autour d' un bon feu.

"Qu'est-ce que c'est donc que cette bonne odeur qui saut de ces cendres?" dit un soldat à son camarade. "Cherchons un peu." Ils fouillèrent dans la braise avec le bâton et une des célèbres pommes de terre envoyée au roi par le préfet de Mons y resta fixé. En la détachant du bâton la farine blanche qui en sortit était si appétissante qu'elle fut avalée sans la moindre cérémonie.

Imaginez-vous cette fête à la recherche des pommes dè terre.

Le lendemain les soldats entrèrent dans la ville et l'histoire de la trouvaille se répandit rapidement. Elle arriva aux oreilles du roi.

J'ai certaines appréhensions que le malheureux chef de cuisine ne perdît sa position pour avoir servi des pommes de terre crues au festin d' un monarque!

Quoiqu'il en soit la chronique nous informe que l'on fit venir une autre provision de. "battalas." Le roi donna une autre fête, et cette fois (les pommes de terre étaient roties) les gourmands même n'y trouvèrent rien à redire.

Savez-vous comment il arriva que la pomme de terre ne devint pas une nourriture générale avant le règne de Louis XVI., et comment il se passa que la reine Marie Antoinette en porta les fleurs dans sa belle chevelure? Eh bien, ceci fera un bien joli conte pour un autre jour.

* * * * * *

Alexandre Dumas avait des unes plus pratiques et d'une utilité plus immédiate quand il composa son "*Grand Dictionnaire de Cuisine.*"

Alexandre Dumas était un beau mangeur comme il etait un beau conteur. Dans le cours de l'année, 1869, il l'écrivit le "Grand Dictionnaire de Cuisine," dont voici quelques extraits.

"L' homme ne vit pas de ce qu'il mange mais de ce qu'il digère; quelque part que l'homme soit né il faut qu'il mange. L'homme sauvage mange par besoin, l'homme civilisé par gourmandise. C'est pour l'homme civilisé que j'écris mon Dictionnaire."

Pommes de Terre à la Parisienne.

Faites fondre un morceau de beurre ou de graisse dans une casserole avec un ou deux oignons coupés en petits morceaux; ajoutez-y un verre d'eau et jetez-y vos pommes de terre, que vous aurez pelées proprement, avec sel, poivre, bouquet garni et faites cuire à petit feu.

Purée de Pommes de Terre.

Faites cuire à l'eau des pommes de terre bien farineuses, écrasez-les, passez-les à travers un "passe-purée," mettez-les ensuite dans une casserole avec du beurre, du poivre et du sel, remuez-les comme une bouillie, ajoutez un peu de lait jusqu'à ce que cette purée ait une épaiseur convenable et servez-la garnie de croûtons frits dans du beurre.

Pomme de Terre a l'Italienne.

Faites cuire des pommes de terre dans l'eau, pelez-les et écrasez -les, mêlez-y un morceau de beurre, de la mie de pain trempée dans du lait; versez un peu de lait pour faire une pâte manible, ajoutez sept ou huit jaunes d'oeufs frais et cinq blancs battus en neige, mêlez bien le tout et dressez-le en pyramide sur un plat. Faites couler dessus un peu de beurre fondu; faites cuire au four de belle couleur et servez chaudement.

Pommes de Terre Farcis.

Lavez et pelez une douzaine de pommes de terre, fendez-les en long par le milieu et creusez-les adroitement avec un couteau ou une cuiller; puis faites une farce avec deux pommes de terre cuites, deux échalotes hachies, un peu de beurre, un petit morceau de lard gras et frais, un pincée de persil et ciboule hachies, pelez le tout ensemble, ajoutez sel poivre, formez-en une pâte liée, emplissez l'intérieur de vos pommes de terre avec cette farce en bombant un peu le dessus: garnissez de beurre le fond d'une tourtière, rangez les pommes de terre dessus, faites les cuire à feu modéré pendant une demi-heure, feu dessous et dessus afin qu'elles se rissolent, et servez.

German

Siegfried Benignus

The instruction in German will begin at the age of ten, and will be given one recitation daily.

The perceptive faculty of the pupils will then have been sharpened by four years of school work. They can read and write the English language tolerably well, and can comprehend the principal rules of its grammar. Their organs of speech are still elastic, and by the aid of a correct phonetic method, are readily adaptable to the various positions needed in the production of the specific vowels and consonants of the German tongue. Their interest for the cognate language can be easily awakened at this age, and since they are not overburdened as yet with other branches of study, they will be eagerly responsive to the spirit of the language and to the life of the German people.

To advocate beginning at a later age would mean the losing of a great deal of precious time. Besides, older people are often seriously handicapped by the ridiculous dread of blundering in attempting to speak a foreign language. As a rule, to begin earlier than the tenth year would be unwise, and to argue for it would be to overestimate the capacity of the child, or to underestimate the difficulties of the German language, which, though properly beginning early in the course, is not to be regarded as milk for babes.

The subject-matter for the first year is:

1. The school.

Objects in the schoolroom, their place, their number, their color and form, the materials of which they are made.

Persons (teachers, pupils and visitors) in the schoolroom, their name, their age, and ordinary movements.

2. Arithmetic.

Cardinal numerals to 100; addition and subtraction; ordinal numerals.

3. Division of time.

The hour (watch, clock), days of the week, months, date, festivals, holidays, vacations, phenomena of the four seasons; variations of temperature.

4. Reading exercises in the German letters.

5. Writing exercises in the German small and capital letters.

"Normal" alphabet as taught in Germany; dictations (new orthography as laid down by the German government); memorizing in prose and verse of easy and attractive subjects.

The grammar in connection with the aforesaid subject-matter will include:

a. Formation of the plural of substantives.

b. Declension in the singular with adjectives.

c. Application and declension of articles, of possessive pronouns, and of the principal demonstrative and interrogative pronouns.

d. Conjugation of simple and compound verbs in the indicative present and imperfect, and in the imperative.

e. Affirmative, negative, and interrogative sentences.

f. Constructions direct and inverse.

The month of October will be devoted especially to the training of the ear, and the elements of writing and reading.

High School and Pedagogic School

To go successfully through the four years of high school, a course of three years at least in German is prerequisite. Thepupils should become as perfect as possible in speaking, writing, and reading, and should become familiar with German literature, life and habits, history, geography, and commerce.

The instruction for post-graduates and adults who have learned German already, will aim to accomplish the following:

1. They should be thoroughly and practically versed in good conversational forms with the various idiomatic expressions commonly used in Germany. They should be able to speak this language of everyday life readily and fluently with Germans here or in Germany itself.

2. They should acquire a correct pronunciation, free from foreign accent.

3. They should learn to master the written language, with its grammar and orthography, in order to express themselves plainly and concisely on every subject of life.

4. They should attain to a fair knowledge of German literature, and to an understanding of the reciprocal influences of the two kindred languages and literatures.

5. They should become acquainted with German history, geography, political and national affairs, and something of German journalism.

6. They should learn to comprehend the manifold and blessed correlations of the Americans and Germans in art, science, technics, commerce, and humanitarian aims.

7. They should become familiar with the different methods of teaching German, regulating the kind and quantity of subject-matter according to the given time and to the capacities of the pupils.

The detailed monthly programmes for high school and for post-graduate work will be arranged from the best pedagogical standpoint in accordance with the necessities of the individual immediately after the opening of the Chicago Institute.

The following numbers of the Course of Study will contain besides the monthly work for beginners, high school and pedagogic school, essays on the educational value of German, including method and teaching.

Department of Library Economy

Irene Warren Frances Simpson

The aims of this course are to acquaint the student with the best books for children, and to bring into systematic lists the student's scattered knowledge of juvenile literature, so that he may more intelligently direct the child's reading and administer a school library. Carefully selected classified lists will be given each student. Certain books will be assigned him to read and report on their literary merits and their adaptation to the child's interest and the school work. As the library is considered a central laboratory of the Institute, its work is most closely related to every department, and excellent opportunities are given of testing the books with the children. Each student will be given some practical problem to be worked out, such as: Make a classified reading list of the best books on birds for a seventh-grade class, list to include literature, science, pictures and music.

Two hours a week will be devoted to the class work, and four hours a week to laboratory work.

Outline of Work of the First Quarter

1. **Bibliography of Children's Literature:** Picture Books. Classified lists of juvenile books in history, literature, geography, science. Reference books.

2. **Book-Making as Constructive Work:** Printing, illustrating, title-pages, tables of contents, pagination, indexing.

3. **Children's Work in Public Libraries:** Children's reading rooms, picture bulletins, library league, home libraries.

References: Children's Literature: *The Child and His Book,* Mrs. E. M. Field; Gardner, 1892. *Five Hundred Books for the Young,* G. E. Hardy; *List of Books for Boys and Girls,* Library Bureau; *Mastery of Books,* H. L. Koopman; American Book Company, 1896. *Literary Landmarks,* M. E. Burt, Houghton, Mifflin & Co. *Report of Committee on Relations of Public Libraries to Public Schools,* 1899, National Educational Association. *Children's Reading List on Animals,* Boston Book Company, 1899. *List of Books for Third Grade Teachers,* Cleveland Public Library; *Course of Study in History and Literature,* Emily J. Rice; Flanagan, 1898. *Reading for the Young,* and *Supplement,* J. F. Sargent; Library Bureau, 1890-6. Lists of Books for Children, printed by the State Library Commission, State Superintendent of Schools, Local School Superintendents, and Librarians; Publishers' Graded Lists.

The Kindergarten

Anna Elizabeth Allen

The growing thought in the mind of the teacher is to make the Kindergarten another home for the children, with larger interests, and opportunities for wider experiences than their individual homes can possibly give them. It will give them their first introduction to community life, and for the first time an objective view of their home life and their relation to others outside their family and immediate surroundings.

Through the medium of the ideal conditions of equal age and equal rights and responsibilities for all is fostered the growth of the true feeling of fellowship, and a recognition of law and its function in harmonizing diverse elements.

Therefore, our first term of three months (October, November, and December) will be devoted to relating the home and school by mirroring the former in the work of the latter, and in harmonizing the different elements in our small community under a law so simple and comprehensive that all may understand and naturally obey it.

During the month of October we shall begin with the personal, vital interests of home life, picturing the individual relations of each child to his home surroundings and encouraging freedom of expression in every way. To further the homelike feeling the parents will be constantly invited to visit the Kindergarten, especially on birthdays and all other anniversaries celebrated in the school, and so far as possible, to take part in the exercises. The larger subject around which our work may be centralized will be:

Law and Order. Special Topic: Home Life. (a) Members of Family. (b) Order of Life in Homes. (c) Children's Room. (d) Different Rooms in Homes.

1. Members of family.

(a) Relation to Life of Child. (b) Animals and Their Care. (c) Relation and Dependence of each to all.

2. Order of life in homes.

(a) Rising hour. (b) Meal-time. (c) School time. (d) Social time. (e) Bedtime.

3. Children's room.

(a) Furniture. (b) Toys. (c) Relation of Mother or Nurse to the Nursery.

4. Different Rooms in Homes and their Use.

(a) Drawing-room. (b) Library. (c) Dining-room. (e) Bedrooms. (f) Kitchen.

Games: So far as the weather permits the games will be played out of doors, and chosen and taught by the children themselves. They will consist of those played at home, and such romping games as will serve to free the children from self-consciousness, and induce a feeling of freedom and social life, viz.: "The Circles," "The Old Gray Cat," "Pussy Wants a Corner," "Catcher," "Hide and Seek," "Tag," "Postillion Game," "Did You Ever See a Lassie," "Pantomime," etc.

RHYTHM: Bouncing of rubber balls to different tempos, simplest marching, skipping, running, and galloping in single line and in pairs.

Stories: Nursery Rhymes and Jingles, The Three Bears, Three Little Pigs, stories of simple home life.

Songs: *This Is the Mother so Kind and Dear*, Eleanor Smith, Part I; *Loving Mother, Kind and True*, Hill's Songs; *Go to Sleep, Thumbkins*, Smith, Part I; *Sleep, Baby, Sleep*, Smith, Part I; *These Are Mother's Knives and Forks*, Gaynor; *Rhythm Game*, Gaynor; *The Brownies*, Gaynor; *The Tea Kettle*, Gaynor; *Song of the Kitchen Clock*, Gaynor; *In Thine Eyes oh! Mother Darling*, Reinecke.

Materials: Clay, paints, large blocks, sand, crayon, and blackboards.

Clay Modeling: Modeling toys, viz.: marbles, balls, dishes, dolls, and kitchen utensils.

Drawing: Pictures of dolls, doll houses, and furniture houses; illustration of stories.

Cutting: Paper dolls.

Painting: Pictures for doll houses; illustrating stories.

Large Blocks: Building doll houses large enough to get into, with furniture to fit; models of houses, showing position of windows, doors, etc.

Sand: Smallest children play freely in sand with tools; larger ones lay out plan of home grounds, gardens, flower-beds, walks, etc.

First Grade

Harriet Bradley Atwood

History—Study of Home Activities: There will be a continued constructive play carried on throughout the year based on the children's interest in their individual homes.

1. In this connection, in October they will begin the construction of a playhouse, to be in miniature the homes in which they would like to live. In the planning of rooms, decoration, and furnishing, each child will be guided by his own taste and judgment. He will, however, have opportunity given him to see beautiful designs and models, and by constant observation, comparison, and discussion, his crude image of the home will grow in beauty and vividness.

2. Function of the home—protection against heat, cold, storm, and enemies. The children will be asked to construct a simple home which they think would protect them in this season. They will observe what is in their environment and be allowed to experiment. The probable outcome will be a tent or wigwam.

Simple stories of people who really lived in such houses will then be told, illustrating their advantages, disadvantages, food, clothing, furniture, and habits. Owing to the greater simplicity of the primitive home, the children will be better able to understand how environment influences the life of a people and how man has been enabled to overcome environment under varying conditions.

Literature: 1. A period for social entertainment will be a regular part of every day's program. The desire to add to this entertainment will be the child's motive for the telling and dramatization of stories, myths, poems, and songs. Some of the stories used during October will be:

Golden Rod and Aster, Cooke's *Nature Myths; Clytie*, Bullfinch's *Mythology; Hiawatha's Childhood, Mondamin, Pearl Feather*, Longfellow's *Hiawatha.* Selected Indian myths, stories, and games. Selected ethical and animal stories, depending upon the experience of the class.

Geography: Constructive study of the landscape, based upon field trips to the following typical areas: beach, cliff, ravine, swamp, woods, prairie, and farm.

The children will construct a background of paper upon which they will represent with water-colors or crayons the general appearance of the October landscape in each typical area. They will also make models in sand showing general topographic relations of the areas studied. (As far as possible these areas will be represented in an outdoor laboratory, and the children will try various experiments with typical plants and animals.) They will bring their collections of soils, stones, water, etc., to these models and test their observation by attempting to distribute them properly. With the material thus roughly classified, the indoor work will consist in comparing the groups as to their chief characteristics, and in recording the data from all sources in permanent form by means of paper cutting, painting, and writing. (See July number of COURSE OF STUDY, page 78.)

Nature Study: 1. Study of the October landscape by means of daily pictures on blackboard.

2. Recording of observations as to birds, insects, animals, flowers, etc.

3. Selection of trees for study throughout the year.

4. Fall visit to animal house in Lincoln Park.

5. Gathering of seeds for use in spring.

6. Drying of fruits.

7. Fall visit to the farm. Classification of stones and other specimens found on field trips.

8. Study of changing temperature in connection with observations concerning bird departures, fall of leaves and housing of animals in the Park.

Correlated Number: Actual measurements and calculation needed for clear imaging in history, literature, geography, nature study, and constructive work:

1. Making of plans for floor of playhouse, work-bag, tags for desk and hooks, leaves for dictionaries, envelopes for seeds.

2. Measurement of heights of children.

3. Use of thermometer.

Reading: 1. Sentences written on blackboard.

2. Printed lessons and records in connection with work in central subjects.

3. Cook County Normal School reading lessons.

4. Selected stories from *Animal Life.*

5. Selected stories from *Hiawatha Primer.*

Writing, Spelling, English: Recording of things seen on field trip; observations concerning birds seen in the neighborhood during the month; recording heights and ages of children; placing of words in dictionaries; descriptions of October landscape, of regions visited, of objects of interest; reproduction of stories in writing; constant incidental training in oral language.

School Economics: Care of wraps and material. Cooking of simple foods; effect of boiling and baking upon fruits. (See Miss Cooke's outline.)

Art: Illustrating stories; painting, modeling and paper-cutting; painting of October landscape; painting of backgrounds in connection with field trips; blackboard illustration with colored crayons; record of material found on field trips by means of painting, paper-cutting, or modeling; painting of trees selected for study.

Industrial Art: Making of field-bags; designing of rugs or carpets for floor of playhouse; making of costumes for dramatic representations.

Dramatic Art: 1. Dramatic representation of scenes in the lives of the Indians, both historical and imaginary, and of stories told whenever the imaging can be intensified in that way. Training in hearing and reproducing sound.

2. Oral Reading — Poems for memorizing: *How the Leaves Came Down,* Susan Coolidge; *Autumn Fires,* Stevenson.

Music: Songs: *Gray Rain; Harvest Song.* Melodic exercises in interval work, based on songs; simple work in original musical expression.

Manual Training: Making floor for playhouse, tags for desks and hooks, envelopes for seeds, leaves for dictionaries, and stretcher for painting paper. (See Manual Training outline.)

Physical Training: 1. Anthropometry; measurements; examination; sense tests; blood tests.

2. School-room exercises; position; standing; motor work; primitive games.

3. Work in gymnasium; individual gymnastics; class gymnastics; rhythm; primitive games.

Second Grade

Antoinette Hollister

History: The work of the year for the second grade will be a study of the immediate necessities of the child and of the related experiences of the race. A brief study will be made of the child's environment, and he will select what he regards as necessities in his school and home life. He will discover that his clothing, food, and shelter are supplied as a result of the labor of many individuals, and that the comforts he enjoys are possible because of community life. In order to help him to realize and appreciate present social conditions he will be asked to imagine these conditions removed, and to attempt to solve the problem of the provision of clothing, food, and shelter as it must have been solved by the primitive peoples.

The danger of attacks from wild beasts will necessitate the invention of weapons of defense, and the need of shelter will point out the use of the cave home. The children will construct a cave, and people it with representations in clay of the cave men engaged in the occupations to which they must have been limited.

They will visit the Field Columbian Museum, and become familiar in this way and through the use of pictures and the stereopticon with the tools, weapons, and implements used by the cave men, and with their style of ornament.

The result of the investigations of one group will be given to another in the form of reading matter or dramatic representation.

Literature: *Story of Jubal, Jabel, and Tubal Cain*, George Eliot; *The Tree*, Björnsen; *Appleseed John;* History of Ohio. Stories adapted from the history of primitive peoples will be printed for use in this grade.

Geography: Caves. Children will begin with a study of the lake shore, observing the action of air and water upon rocks. They will experiment with acids upon limestone, and make with the acid a small cave in limestone.

With pictures and stereopticon slides they will study the famous caves of the world, especially those in which remains of the cave men have been found. They will try to discover the source of underground water; how water enters the earth; the work of underground water, and the method of formation of stalactites and stalagmites.

NATURE STUDY: Harvest. A visit to a farm will serve as a basis for much of the work of this month. Collections will be made of some of the farm products, and their functions will be studied. The children will study, wherever possible, the processes of storing and preserving food products, and will themselves decide upon a plan for preserving for future use the seeds and fruits which they collect. They will also study the dispersion of seeds by means of wind and water; the carrying of seeds by animals; methods of self-distribution of seeds, and man's part in their distribution. They will discuss the function of color in fruits.

Correlated Number: Simple addition, multiplication, and division in connection with the nature study, history, manual training, and physical training and industrial art. Use of weights and dry measures in the study of fruits.

Reading: Reading matter correlated with the child's interests, activities, and experience.

Writing and Spelling: Continued attention to habits of correct punctuation, spelling, and improvement in form and expression.

School Economics: (See Miss Cooke's outline.)

Art: Modeling of cave men. Painting of scenery for the puppet theater. Painting of autumn landscape.

Industrial Art: Making of weather signals; dictionary; modeling aprons.

Dramatic Art: Composition of original plays to be played in the puppet theater. Dramatization of stories.

Music: *Harvest Time*, Primer (Modern Music Series); *Autumn Song*, Primer (Modern Music Series); *Rain Song*, Primer (Modern Music Series); *Gray Rain*, Primer (Modern Music Series); *Pretty Little Johnny*, Reinecke; *Thank You, Pretty Cow*, Primer (Modern Music Series); *Laughing Rill* (sight reading), Primer (Modern Music Series). Game songs: *Here We Go Round the Mulberry Bush; Warm Hands.*

Manual Training: Making of large envelopes for paintings. Construction of looms.

Physical Training: (1) Anthropometry and examinations. (2) Sense tests. (3) Tests for nutrition.

Primitive games and sports, through which will be secured a correct standing position and positions for motor work. Prescribed work for individuals. Developmental gymnastics in classes.

References: *First Steps in Human Progress*, Starr; *Primitive Industry*, Abbott; *Primitive Culture*, Tylor; *Primitive Man*, Figuier; *Prehistoric Times*, Lubbock; *Aspects of the Earth*, Shaler.

Third Grade

Gertrude Van Hoesen

The work for the year will be a more analytical study of the child's environment than has been followed during the first two years in school. This work is based entirely upon the necessities, activities, and growing interests of the children. The study of city life with all that goes to make it desirable—a good city from every standpoint—is the subjective basis of the year's work. The requisites of a good city are worked out through the primitive or simple cities of the ancient Greeks to an understanding of the complex conditions surrounding the child in Chicago. It will be necessary at every point to use science to answer the problems of heating, lighting, etc., which come up during the year. All of the making will grow out of the necessities of the subjects studied, or those of the children, necessities which demand the use of the article made.

Geography:—Roads. Get the experiences of the children as to the different places they have been—in the country, mountains, seashore, or other cities. Why do so many people live in cities? Is there any reason for living in Chicago? If Chicago is a good city what must be considered? 1. Roads. 2. Drainage or sewerage. 3. Water supply. 4. Lighting. 5. Means of transportation. 6. Commerce. As good roads are one of the first requisites, study their evolution from earth to asphalt. 1. Natural. 2. Gravel. 3. Cobble. 4. Cedar-block. 5. Macadam. 6. Asphalt. In each case make tests which will answer the question of desirability. Make excursions to portions of the city where the roads are being improved, and to the Field Columbian Museum, where the models of some of the more complex are to be found. The children will make models of each kind as far as possible. The relation of expense will also be considered.

History and Literature: The Wanderings of Ulysses, with the background of the history of the Mycenæan Age, will form for the first three months the basis for the study of the early Greeks, with their primitive conditions and industries, and their simple cities.

The work will be taken up as follows: Story of Ulysses, beginning with the cause of the Trojan War.

1. Ulysses' home at Ithica.
2. Appearance and life of his friends.
3. Cause and preparation for war.
4. Journey to Troy.
5. Ten years' siege: principal scenes during the siege; story of the wooden horse.
6. End of the war. The beginning of the homeward journey.

The children will make a representation in miniature of the city of Troy, placing the Grecian army outside the walls. They will work out as far as possible the movements of the two armies.

Stories of heroism embodying ideals of courage, bravery and honesty, will be told throughout the year.

Mythical stories embodying some beautiful truths will be told in connection with the nature work. To arouse a deeper interest in and sense of comradeship with the animals of Lincoln Park, the *Jungle Books*, by Rudyard Kipling, and *Wild Animals that I Have Known*, by Ernest Seton Thompson, will be constantly used.

Nature Study: The October landscape will form the basis of the nature study for the month: 1. Trees. 2. Flowers. 3. Fruit. 4. Vegetables. 5. Insects. 6. Birds. 7. Rainfall. 8. Wind. 9. temperature. Preparation for winter: 1. Our preparation. 2. That of the vegetable kingdom. 3. Relation of temperature and wind to the changing landscape.

Seed dissemination. Preparation of plants for winter. Collection and classification of seeds according to their mode of distribution: 1. Wind. 2. Animals. 3. Water. 4. Self-sown. 5. Man.

Notice whether the plant sows its seeds singly by opening the pod, or in the pod as a whole.

How far do the different plants scatter their seeds?

How do we prepare for winter at home?

Classification of vegetables according to the part eaten. 1. Roots. 2. Stems. 3. Leaves. 4. Flower. 5. Fruit. 6. Seeds.

Constituents of fruits and vegetables: This grows naturally out of the drying of the fruit. Slice and carefully weigh 50 grams of apple for drying. When thoroughly dried re-weigh. How much has evaporated? Measure out the amount of water that has disappeared. What part of the apple is water? What part is solid matter?

Weigh out 5 grams of the dried apple and burn until all the carbon has disappeared. Weigh the ash. What part of the fruit is ash?

Compare the amount of water, solid matter, and ash, in the different fruits and vegetables.

Animals: Birds. What birds are to be seen in the park now? What are they doing? Begin making a collection of deserted nests. Keep records of birds by means of both painting and written expression, always leading the children to use the mode of expression best adapted to telling the story.

Do the same kind of work with the insects. Visit the animals in the Zoölogical Gardens of the park, noting characteristics, habits of eating, and movements.

Correlated Number: Only such number-work will be used as is necessary in the other subjects. The following will be required during October:

1. Number of seeds sown by the different plants.
2. Linear and square measure in connection with constructive work.
3. Linear and liquid measure and weight in connection with physical measurements.
4. The use of whole numbers and fractions in the comparison of constituents of fruits, and she weather, and sunshine charts.

Reading: *Fifty Famous Stories*. Selections from all sources correlated with the work.

Writing and Spelling: Records of all nature observations. Description of the different kinds of roads and directions for building them. Dramatization of stories in written form.

Language: Continued attention to clearness of expression in both spoken and written language. In the latter the correct use of capitals and necessary punctuation.

French: Correlated with sewing and geography. Hemming of towels for school use. Excursions to South Water Street, to purchase fruits and vegetables for the cooking classes.

During these occupations and excursions the French language will be exclusively used in directions and comments. (See outline for French, page 151.)

School Economics: Making general laws for the management of the room will be one of the first duties of the children. This will include the relation of the children to each other, and the care of the room.

Cooking—See Miss Cooke's Outline.

Art: Painting pictures of the landscape and individual trees. Painting and clay-modeling of fruits, vegetables, and animals.

The children will coöperate in making stencils of the scenes in history, to be used in decorating the room.

Industrial Art: Laboratory or modeling aprons; a dictionary.

Dramatic Art: Dramatic presentation of some of the stories connected with the Siege of Troy.

Training in hearing and reproducing English vowel sounds.

Poems to be studied and memorized: *The Tree*, by Bjornsen; *I'll Tell You How the Leaves Came Down*, Susan Coolidge.

Music: *Rain Song*, Primer (Modern Music Series); *Little Brother Johnny*, Reinecke, Fifty Children's Songs; *The Woodpecker*, Primer (Modern Music Series); *The Wind Song*, First Book (Modern Music Series); *The Oriole's Nest Song*, First Book (Modern Music Series); *Dainty Milkweed Babies;* Eleanor Smith's Songs, Part II.

Manual Training: As an outgrowth of the other work or the necessities of the schoolroom the children will make: 1. Painting stretchers. 2. Large envelope to hold work. 3. Seed envelopes. 4. Seed-labels. The third grade will saw off the boards to be used by the first grade as foundations for their houses.

Physical Training: Anthropometry:

1. Measurements and examinations.
2. Sense tests.
3. Tests for nutrition.

Rhythmical games through which the children gain poise and better control of body.

Traditional games.

Prescribed individual exercise.

Developmental gymnastics in classes.

Fourth Grade

Clara Isabel Mitchell

The outline for the fourth grade work will be planned from two standpoints, the first being that of the children and their activities; the second, that of the teacher and the subject-matter to be taught. The activities planned are those most natural to the children, and being common to the whole race are such as will relate them to the work of the world. They will include processes of wood-work, sewing, weaving, and cooking. The subject-matter to be given by the teacher in the form of lessons will be that demanded by the needs of the school community in its pursuance of these activities. By means of books, stories, descriptions, pictures, and discussions the children will be helped to interpret in a degree the conditions of their home and school life. It will be the aim of the teacher to test all subjects and methods according to their fitness for this end.

Cooking, as one of these activities, will include preparation and serving of some simple selected foods.

Weaving, spinning, sewing, and embroidery will be necessary processes in the making of various articles for use in the school.

Wood-work will furnish another means of fulfilling the needs of school life.

Elementary book-binding and decoration will extend throughout the year in the making of scrapbooks, portfolios, and simple bookcovers.

Entertainments will be given for the pleasure of younger children. There will be games, plays, and exercise in the gymnasium.

The children will have the care of the plants and animals brought into the school by themselves or the teachers.

Excursions into the city and surrounding country will be made for the purpose of seeing the continuation and development of these activities in the larger life of the community of which the school is a part.

There will be laboratory work as needed to explain problems arising in the pursuit of the activities of daily life.

Books will be used, stories, and descriptions with stereopticon, which are clearly a help in the immediate life of the schoolroom or home. Composition will be a part of the school life in the writing of original plays, stories, descriptions, records, letters, and notes whenever the needs of the children demand such expression.

Musical expression in singing will be a prominent and constant factor in the school life, the children making songs as well as singing by note, and listening to the best music that can be found for them.

Cooking: Children will discuss the methods of preparing fruit for the table, and will plan their own experiments in drying, baking, and steaming. They will prepare and serve one luncheon each week for the children of another class.

Weaving: The weaving will be done on simple frames constructed by the children in the manual training shop. Its motive will be the making of a curtain for use in the school. The work will be so arranged that all may contribute a part. Material will be heavy carpet yarn of good color woven into strips and sewed together with ornamental stitches.

Sewing: Sewing aprons will be designed, sewed, and ornamented with cross-stitch in colored cottons or linens.

Dyeing: Experiments will be made on cotton yarns with aniline and natural dye stuffs to ascertain the most practical means of getting good and enduring colors suited to the embroidery of the aprons.

Wood-work: Simple looms, referred to under weaving, will be planned and made from model. (See page 145.)

Bookbinding: A portfolio necessary for preserving plans and papers will be made by each child for his own use. Materials used will be straw-board, vellum, and tapes.

Drawing and Painting: The children will be asked for pictures of only such stories and subjects as are sufficiently interesting to move them to free and enthusiastic expression. In all illustrations they will be allowed to choose their own mediums and will be encouraged to originality in work. Working drawings will be made of all articles constructed in any of the crafts.

Entertainment: The fourth-grade children will be responsible for the entertainment of the entire school for a period of twenty minutes one morning of the month. As the appointed morning happens to be Chicago Day, the exercises will be planned to fit the occasion with appropriate stories, songs, drawings, and quotations. The entertainment of other children in the primary grades will occupy an hour toward the close of the month and at that time the children will select such stories, experiences, songs, and incidents from the month's work as they think will prove interesting to their visitors.

Physical Culture: Children's physical measurements will be recorded on charts, and curves made. Sense tests also will be made with every child and tests for nutrition. Proper positions in standing and working will be watched for and encouraged in the school-room. Short periods of rest will be spent in games and plays. Individual and corrective gymnastics will be given in the gymnasium, also developmental class-work, with exercises in rhythm and games.

Field-Trips: Excursions will be made to a farm, a bake-house, the stockyards, wharves, South Water Street, a cotton-mill, social settlements, and, where practicable, to the characteristic colonies of foreigners. Field excursions are planned also to the Sand Dunes, to Winnetka, Waukegan, Beverly Hills, and a swamp region. Stereopticon pictures will be substituted for visits to the places which prove impossible of access.

Sociology: In discussing the people concerned in the work of the city the children will learn that many nationalities are represented in our population. Visits to the different industries and settlements of the city will give only a slight acquaintance with all these people, and therefore the knowledge gained by these means will be supplemented by stories—the best possible—of the lives, customs, and arts of the people both here and in their mother countries, pictures and geographical descriptions; stories from their literature, reproductions of their art, and biographies of their great men, all to the end of higher appreciation of their lives and better understanding of their value to the community.

Geography: The geography of the month will be the study of Lake Michigan as a force in building the land for the present city; its work in building and wearing will be observed at the Sand Dunes, Winnetka, and Lake Side, also at the old shore line as seen at Waukegan, and at Beverly Hills. The lake and river will also be studied as affording highways and harbors for commerce. In this connection are planned excursions to the wharves, and, if possible, to a lighthouse.

Nature Study: The lessons in Nature Study will be based upon the field trips, and will answer as nearly as may be the problems arising in the daily work of the children. As sociological pictures of Chicago are the special study of the month, the children's attention will be directed to the observation of weather conditions as influences in the life of people. The report of the United States Weather Bureau will be read daily, and individual observations of temperature, rainfall, direction of wind and cloudiness will be recorded in note-books. Further than this, there will be study of typical geographical areas of the region, with observation as to kinds of soil and characteristic plant life of each. Provision will be made for indoor, and if possible outdoor, experiments in growth of seeds and plants in the different soils—*i. e.*, sand, prairie-soil, swamp-soil, and garden-soil. Children will be encouraged to bring into school all the plant and animal life which can be properly cared for there, and this, with the animals visited at the zoölogical gardens, will be constantly observed and informally discussed.

Arithmetic: In cooking, fruits will be dried, and the dried fruits will be prepared for eating. These processes will make prominent the large proportion of water in the fruits. To measure this and gain a knowledge of recipes and quantities for cooking, a study will be made of exact proportions. The familiar fruits will be weighed, dried, and reweighed to find loss by evaporation. Percentage will be taught here as the simplest means of expressing proportions.

Reading and Dramatic Art: Bits of characteristic literature, giving glimpses of the former national life of some of the people of the city, have been selected for the children's reading, or for telling to them. *The Tar Baby* will be told as a typical negro story, and the Siegfried myth will probably be dramatized as an aid to the comprehension of the Scandinavian peoples. In addition, stories will be selected from *Greek Folk-Lore* (Riverside edition), Scudder's *German Folk-Lore, Chinese Folk-Lore,* and the lives of Giotto, Fra Angelico, and Raphael.

French: Correlated with cooking. Making and serving of simple dishes. Memorizing and singing of *La Bergere.* During these occupations the French language will be exclusively used. (See Outline for French, page 151.)

Music: Chinese, German, Italian, Russian, and Greek lullaby songs will be taught by rote; also, *Foreign Children,* by Eleanor Smith, and *Sweet October.* Children will be encouraged in solo-singing, and will be asked to compose original text and music for their own little songs. These original compositions will be written for them, and will thus form the beginning of the study of musical notation.

Fifth Grade

Willard Streeter Bass

History: Subject—The Settlement and Early Industrial Development of New England.

New England an Important Source of the Present Population of Chicago: Ask children where the people they see around them came from, in particular, where the native "Americans" or their parents came from. Find how many of the children are descendants of people who came from Eastern states, in particular from New England.

New England: Describe the principal occupations and industries of New England, and show pictures of typical landscapes. Describe somewhat the land and the people.

First Permanent Settlement in New England: Show pictures of the Mayflower and the Pilgrims off Cape Cod. Describe the search for a place to found a settlement. Give reasons for the site finally selected. Draw a map of, or mold in sand, Plymouth and its surroundings, showing the good harbor, the slope already cleared by the Indians and the hills commanding views of the surrounding country and the sea.

Government of Plymouth Colony: Describe the fears for lawlessness and disorder which troubled the company on the Mayflower. Have children see how this led to the compact on the Mayflower, and to the election of a governor.

First Years of Plymouth Colony: Describe briefly the sufferings of the first winter, the relations with the Indians, including the treaty with Massasoit, the success of the first summer, and the anxieties of the next few years until the firm establishment of the colony.

Communism: Describe the system of common ownership of land and property employed at Plymouth, its causes and its effects. Discuss the reasons which led to its abandonment at Plymouth, and how the arguments which Governor Bradford gave against communism are applicable to present socialism. [See Hart, *American History Told by Contemporaries,* Vol I, pp. 352, 353.]

Reasons Why Puritans Came to New England: Tell of the formation of Separatist churches, of the opposition of James I. to them and his resolve to "harry them out of the land," and of the annoyances which led the congregation at Scrooby to emigrate to Holland and thence to America.

The Great Puritan Exodus: Tell of the attempt of Charles I. to govern without a parliament, and how great numbers of Puritans, fearing the loss of their political liberties, resolved to follow the pilgrims to America, and established a state in which they might secure their own civil and ecclesiastical institutions. Draw a map of New England showing the position of the various colonies and towns founded between 1629 and 1640.

Geography of New England: Study by means of pictures and descriptions the topography of New England, the character of the soil, the rivers, the forests, the harbors, the water-power, the hills, bowlders, and glacial débris, and the climate. Consider what things will probably grow and what industries will be possible and profitable under such conditions.

Occupations and Industries of Colonists: 1. Agriculture. Have pupils reason about the great need for this industry, about what kinds of things will grow in New England, whether a staple product is possible, whether this will lead to large farms or small, and whether slave labor will be likely to prove profitable. 2. Manufactures: Show how the lack of any staple product for export makes great need for manufactures, and how the excellent water-power makes them possible. Notice how the uniformity of agriculture discourages trade and encourages home manufacture, and on the other hand that the tendency of the Puritans to settle in villages encourages trade; and note the early establishment of grist mills, tanneries, mills for weaving cloth, etc. 3. Fishing. Show that the conditions for this industry were so favorable that it soon furnished a leading export of the colony.

Homes and Family Life of Colonists: Show pictures of Fairbanks house in Dedham and other very old houses. Visit museums and examine colonial household utensils and furniture. Find out how the cooking was done and begin to learn the processes of spinning and weaving. Make a vivid word picture of an evening in a colonial home; show the occupations of each member of the family. Let the pupil attempt to draw or paint such a picture.

References:

For maps:

Drake, *The Making of New England*, pp. 77, 81, 156, 161.

Winsor, *Narrative and Critical History of America*, Vol. III, p. 272.

For history and government of Plymouth Colony:

Hart, *American History Told by Contemporaries*, Vol. I, pp. 344-349, 356-359.

For home and industrial life in the colonies:

Earle, *Home Life in Colonial Days*.

Howe, *The Puritan Republic*, pp. 130+; pp. 153+.

General references:

Fiske, *The Beginnings of New England.*
Doyle, *English Colonies in America.*
Lodge, *English Colonies in America.*
Eggleston, *The Beginners of a Nation.*

Children's Reading: Nina Moore, *Pilgrims and Puritans.*

Jane J. Austin, *Standish of Standish.*

Geography: Subject — Glaciers and glacial action about Chicago.

Study of the topography at Stony Island, Glencoe, and other places which show evidence of glacial action.

Preparation for field-work. Use of compass and clinometer.

Visit Stony Island. Observe general form of the hill. Measure the inclination on the north and the south sides. Notice the composition of the rock. Look for loose material, soil, and pebbles. See how the latter differ from the rock. Look for striations on rock and pebbles. Observe the direction of striations on rocks. Make a sketch of some characteristic portion of the hill.

Discuss data obtained at Stony Island. Model the hill in sand. Ask questions about the causes of the present conditions there. Write description of the trip and the place.

Visit drift areas in Glencoe. Observe the material of the drift and the forms in which it is left. Look for pebbles which show scratches.

Visit brickyards and other excavations in Chicago.

Discuss all data obtained together. Ask questions concerning causes of the above appearances.

Compare the topography and landscape about Chicago with that of New England as studied in history.

References:

Chamberlain, *Terminal Moraines of Second Glacial Epoch;* Third United States Geological Survey, pp. 295-482; Salisbury, *Geography of Chicago and Its Environs;* Wright, *The Ice Age in North America;* Lyell, *The Principles of Geology*, Vol. I, pp. 359-383; Tarr, *First Book of Physical Geography*, p. 294.

Nature Study: Preparation for systematic observation of the weather as a basis of determining its effect upon plant and animal life.

USE OF THERMOMETER.—Explain principle of thermometer and how it is read. Explain maximum and minimum thermometers. Have pupils take two daily readings from ordinary thermometer, and one reading from maximum and minimum thermometers.

USE OF RAIN GAUGE.—Take daily observations.

USE OF SKIAMETER.—Have pupils make a skiameter and measure the morning and noon elevation of the sun at least twice in the month. Measure the hourly change in elevation at least once.

DAILY WEATHER RECORD. — Keep daily weather record, using the color chart described in Jackman's *Nature Study in the Grammar Grades*, p. 37. Record the amount of sunshine, of cloudiness and rainfall, the temperature and the prevailing direction of the wind. At the end of the month compute the percentage of fair, cloudy, and rainy days of the whole number of days in the number of days in the month, and represent the percentages by rectangles of colored paper.

FROST.—Watch carefully for the first frosts. Notice the conditions under which they are formed, *i. e.*, temperature, clearness of sky, etc.

DISTRIBUTION OF SEEDS.—Visit typical areas, such as a hillside, the bank of a stream, a marsh, and woodland. Collect branches bearing seed-pods. Classify the seeds according as they have adaptations which favor their distribution by (1) wind; (2) water; (3) animals; (4) man. In the last two classes distinguish between edible and inedible fruits. When the seeds are classified mount them by sewing them upon stiff cardboard. Find the percentage of the seeds from each area which fall into each class.

EFFECT OF FROST UPON PLANTS.—Notice the frost upon (1) perennials, the coloring and fall of leaves, the opening of burrs, the fall of nuts, etc.; (2) upon biennials, the death of the upper part of the plant, and the life preserved in the fleshy root; (3) upon annuals, death of all the plant save the seeds.

References:

Jackman, *Nature Study in the Grammar Grades*, pp. 53-67; Lubbock, *Flowers, Fruits and Leaves*, pp. 52-72; Gage, *The Great World's Farm*, pp. 246-277; Kerner, *The Natural History of Plants;* Translated by F. W. Oliver. Half Vol. IV, pp. 833-878.

Number Work

From data obtained with the skiameter find: (1) the area of level surface covered at noon by a column of sunshine of unit cross-section; (2) the area covered at 8, 9, and 10 o'clock by the same column; (3) the ratio of the intensities of illumination in the four cases. Express this ratio as a per cent.

From the data obtained in the work on seeds find what per cent of the seeds studied are adapted for distribution by the wind; what per cent by water; what per cent attach themselves to animals; what per cent have the seed enveloped in an edible wrapping; in what per cent the seed itself is edible. Do the same thing with the seeds found on each of the typical areas studied, and compare the results.

From observations obtained with the rain-gauge compute the quantity of water in barrels and tons falling during a heavy rain upon: (1) a city block; (2) upon Lincoln Park (about 400 acres). Find the whole quantity falling during the month. Find out the average rainfall for October from the weather records, and compare the rainfall the present October with it. Express the result as a per cent.

From data in the weather record find the per cent of days in October which have been fair, cloudy, and rainy.

Languages

English: WRITTEN WORK. — A description of the trip to Stony Island and the appearances observed there, with suggestions for the causes which produced them.

A summary of the means by which seeds are distributed.

A summary of the results of the pupil's study upon the effects of frost upon plants.

Original stories of child life among the Puritans.

German: Training of the ear. Elements of reading and writing. Appropriate reading and writing exercises. (See Outline for German, page 154.)

French: Correlated with the distribution of seeds. Collections of seeds. Making of boxes for the collections. Stories: *How Potatoes Were Introduced into France; The Introduction of Tobacco into England.* All conversation during this hour carried on exclusively in French. (See Outline for French, page 151.)

Dramatic Reading: Study of manners, dress, and home life of the Puritan colonists.

Dramatization and presentation of historical and imaginary scenes in Puritan life. Conduct of a town meeting after the Puritan model.

Study of Longfellow's *Miles Standish*. Oral reading of some of its dramatic parts.

Training in the correct utterance of the vowel sounds.

Art, Arts and Crafts

Music: *Sweet October*, Second Book Modern Music Series; *Harvest Song*, Text by Chadwick; Songs of Life and Nature.

Characteristic Puritan Hymns:

Round, Second Book Modern Music Series.

Painting: Landscape, special study of change of colors due to action of frost. Rapid painting of seeds, showing structures which aid in their dissemination. Painting of branches bearing ripe fruit, showing color relation between leaves and fruit.

Modeling: Experiments in pottery.

Textile Art: Making Puritan costumes. Spinning of wool. Weaving of homespun.

Manual Training: Making of wooden frames to hold painting canvas.

Making of skiameter.

Beginning of the construction of a colonial loom.

Physical Training: Fundamental gymnastics, games, plays, and recreation in and out of doors. Measurements, physical examination, sense tests, and fatigue tests.

Sixth Grade

Edith B. Foster

History: The subject for the month is CHINA.

The study of China will appeal strongly to the interest of the children because of the present troubles in that country. The aim at the outset will be to make the people and life of the far-away place real to the children through its relation to the life of the Chinese in Chicago and in America,—a matter of which they have a little first-hand knowledge. To the end that they may collect and relate their present unorganized information, various questions will be asked, somewhat as follows:

What do you know of the Chinese in Chicago? In America? Describe the appearance and dress of a Chicago Chinaman. (A composition may be written in this connection and illustrated by the pupil.) Have you ever seen Chinese writing? Where? What was it like? What are the principal foods of the Chinese? What do we get from China? What are the occupations of the Chinese in Chicago? Where do they live? Do they mingle with the white people? Where is the largest Chinese population in the United States? Why did so many Chinese come to this country? What is the attitude of Americans toward them? How have they expressed that attitude? How do you account for this attitude?

After this present knowledge has been organized and expanded, the work will proceed upon the following plan:

I. What have you read about China in this week's newspapers?

II. How do America and Europe come to be involved with China? A. The missionaries; B. The embassies.

III. Why are the nations enough interested in China to send embassies? A. Value of Chinese products. 1. Rice, tea, silk, opium, lacquered ware, porcelain.

IV. Reason for diversity of products: A. The country has great extent in latitude. 1. The coast line from the north of the Yalu in Corea to that of the Annam in Cochin-China is nearly 4,400 miles. B. The topography of the country is extremely varied. 1. Delta region. 2. Great plain. 3. Mountain regions.

V. Difficulty of establishing relations with the Chinese: A. Exclusiveness of the people, caused by—1. Fertility of their soil. This enables them to get along without help from outside their own borders. The fields in the loess have probably been cultivated continuously for over 2,000 years, and yet yield two and three crops a year. 2. Mountains, sea, and deserts surrounding. These features have preserved the Chinese from attacks. 3. Early development of literature. The Chinese written language is of a sort very difficult to translate. It has been hard to tell about other languages in it, and difficult for foreigners to learn it. (Use of "pigeon-English" in trade.) 4. Method of education. Education in China consists almost solely of drill — memory-work — in the Chinese classics, and in the practice of Chinese composition. The physical sciences and the history and customs of other countries receive no attention whatever. B. The civil-service examinations.

VI. The people. A. Geographically of two sorts. 1. From mountains (Manchus.) 2. From plains (Chinese proper.)

VII. Social life of the people. A. Walled cities. 1. Crowding in cities. B. Necessary simplicity of life. 1. Food of a Chinese family. C. Danger of famine. 1. Drought. 2. Means of transportation defective. (a) Slow. (b) Small loads.

Hand Work: Making of Chinese costume.

Number Work: Ratio between size of China and population; number of Chinese in Chicago; proportion to rest of population; proportion of Chinese in United States; comparison of areas of plain, delta, and mountain regions of China; comparison of areas of China and United States; comparison of Pekin and Chicago in size and in population; comparison of cost of living here and in China; problems in connection with duties.

Art-Work: Study of Chinese embroideries at Art Institute; study of Chinese design; study of Chinese architecture; sketches of Chinese people and objects as seen in Chinatown.

Dramatic Reading and Expression: Study and interpretation of poem on China; debate on Chinese question; study of dress, manners, and customs of China; dramatic presentation of life in Chinese school; training on vowel sounds, enunciation, and pronunciation.

Music: Chinese folk-song and hymn.

References: *The Middle Kingdom,* S. Wells Williams; *The Middle Kingdom,* Wilson; *Short History* of China, Boulger; *Historic China,* Giles.

Nature Study: The subjects for the month will be, broadly, the preparations of plants for the winter, with especial emphasis on seed-distribution and study of the weather. Wherever the subjects of plant-life and weather are closely related they will be studied together. The use of United States weather maps will continue throughout the year.

Plant Life: A. How it is affected by the weather at this season: 1. By temperature. (Use of thermometer). Extremes of daily temperature: when they come and what they are. Daily average temperature. Effect of temperature on colors of landscape. 2. By rainfall. (Use of rain-gauge and barometer). 3. By clouds and cloudiness. Appearance of plants on cloudy days. 4. By humidity. (Use of hygrometer). 5. By winds. 6. By fogs, frost, and dew.

B. How it is affected by distribution of sunshine. Length of days and nights at this season. (Use of skiameter).

C. Its special problem at this season: to prepare for winter. 1. Kinds of preparation: (a) Shedding of leaves, (b) Withdrawing of juices. (c) Distribution of seeds.

Distribution of Seeds: A. What are seeds? 1. With what vegetables are you familiar? Fruits? What part of the plant, in each case, do you eat? How does your eating of the fruit further nature's plans?

B. Necessity for seed-distribution: 1. Overcrowding. (*a*) Insufficient sunlight. (*b*) Exhaustion of the soil. 2. Benefits of cross-pollination.

C. Means of seed-distribution: 1. By wind, as favored by. (a) Height of plant. (b) Shape of fruit. (c) Weight of fruit. (d) Special appendages: (1) Wings. (2) Down. (e) How far may seed be transported in this way? (f) What plants that you know distribute their seeds in this way? *Examples:* Dandelion, milkweed, maple, ailanthus, thistle, cat-tail.

2. By water as favored by. (a) Buoyancy of seeds. (b) Location of plant. (c) What plants that you know distribute their seeds in this way?

3. By plant itself. (a) By motion of whole plant. *Example:* Tumble weed. (b) By special apparatus. *Example:* Witch-hazel; squirting cucumber.

4. By animals: (a) Animals use fruits and seeds as food. (*a*) The color of the ripe fruit attracts. (*b*) The odor and flavor of the ripe fruit attracts. (*c*) The teeth, gizzard, etc., of certain animals are such as to leave the seed intact. (b) Animals transport seeds in their coats and on their feet and legs. (*a*) Wool of

sheep: burs. (*b*) Feet of wading birds: Darwin's experiment.

5. By man: (a) Men use fruit and seeds as food. (*a*) Seeds usually thrown away. (b) Men ship cattle, sheep, pigs, and grains. (*a*) By trains. (*b*) Along roadways.

Hand-work: Making of hygrometer and skiameter.

Number-work: Comparison of rainfall this month with average for October; by proportion, fractions, and decimals. Calculation of humidity. Calculation of number of seeds produced on a given plant and in a given area.

Painting: Landscape calendar.

Writing: Reports on field-trips and on special subjects connected with the work.

French: Correlated with Nature Study. Study of temperature, rainfall, frost, and dew; effect upon vegetation. The use of French idioms will be introduced in this connection. Making of French calendars for the use of the school, work to be continued from month to month. A French song on the seasons will be taught. (See Outline for French, page 151.)

German: Declension of substantives with adjectives. Appropriate reading and writing exercises. (See Outline for German, page 154.)

Latin: Roman life studied through the Latin language. The pupils will learn the Roman way of expressing an idea, and will themselves express simple ideas about Roman life. Latin grammar will be used only as an aid to the thought. Reading and translation into Latin will be a part of every lesson. These reading lessons will be printed each month. (See Outline for Latin and Greek, page 148.)

Music: *Sweet October* (second book, Modern Music Series). *Harvest Song* (Songs of Life and Nature). Note songs. Beginning of sight reading.

References: 376, 44J12n, Jackman, *Nature Study and Related Subjects;* 581, C85, Coulter, *Plant Relations;* 580, G28, Gage, *The Great World's Farm;* 551, M64, Mill, *The Realm of Nature.*

Gymnastics: Fundamental gymnastics. Games and plays. Recreation in and out doors. Measurements; physical examination. Sense tests; fatigue tests.

Geography: The subject for the year will be Eurasia and Africa. The subject for the month will be COAST LINES.

This subject is related to the immediate interests of the children through the fact that they live on the shore of Lake Michigan. During the first period an attempt will be made to get the class to collate their present scattered knowledge bearing on the location of Chicago, its harbor facilities, and the obvious aspects of the lake shore. In this way their minds will be prepared for the visit to the lake shore to be made the next day. During this visit the children will observe, under direction, the phenomena of the shore. They will note the width of the beach, the presence or absence of inlets, the streams flowing into the lake and the material they bring down, the height of the bluffs and their composition, the action and force of the waves, shore drift, and evidences of shore currents, the building and wearing beaches on the north and south sides of piers. On their return, each child is to write a report illustrated with sketches of what he has seen, to help him to organize his knowledge and to furnish information for others. This will be followed by a recitation on what they have seen and by criticism, by both class and teacher, of reports and sketches.

From then on the study will follow the appended plan:

I. Agents doing work on shores:
  A. Waves.
  B. Shore currents.
  C. Streams.
  D. Atmospheric agents.
  E. Tides. (A brief reference only, until the subject of sea-coasts is reached.)

A. Wave work: Cause of waves. (Experiment with bowl of water and pond.) Motion of particles in a wave. (Experiment with rope tied to door knob and shaken, to show that the wave impulse, not the water, travels.) Carrying power of waves. (Experiment with sand, pebbles, and hose.) Force of waves. (Picture in Farr's *Physical Geography*, page 177.)

B. Shore currents (of Lake Michigan). Causes. Effects. (Transportation.)

C. Streams: Deposition of material. Effects: Changing shape of coasts. ("Banks" of North

Carolina.) Deltas. (Mississippi, Nile. Make deltas with hose.)

D. Atmospheric agents: Wind: Dunes. (Visit Dune Park.) Frost. Weathering.

II. Features made by these agencies:

A. Beaches. (South shore of Martha's Vineyard; picture in Shaler's *Outlines of Earth's History*, p. 120.)

B. Cliffs. (Grand Manan, New Brunswick; picture in Tarr's *Elementary Geology*, p. 230, and in Davis's *Physical Geography*, p. 348; Shakespeare Cliff, near Dover; picture in Shaler's *Sea and Land*, p. 5. (See also scenes in Shakespeare's *Lear*, Act IV., scene VI.; Barra Head, Hebrides, picture in Shaler's *Sea and Land*, p. 22.)

C. Terraces.

D. Bars.

III. Ways in which these agencies have made these features:

A. Erosion — Agent: Water carrying solid matter. Power of this agent shown by history of Heligoland. (See diagram and picture in Tarr's *Elementary Physical Geography*, p. 322. of Reculver in England); see Huxley's *Physiography*, p. 170; picture of Roman castle at mouth of Rhine (Davis, p. 354).

B. Transportation — Agents: Waves, currents, tides, effects.

C. Deposition: Conditions necessary for deposition. Results: Deltas, bars, hooks, spits, etc. Tendency of coast lines to become regular.

IV. Coast lines of North America:

Typical indented coast: Maine. (See maps and pictures.) Typical regular coast: Texas. (See maps and pictures.)

V. Glaciers and glaciation:

Their effects on coast lines.

VI. Rising and sinking of land:

Their effects on coast lines. Sunken region- - Fjords of Norway — (Sogne Fjord, north of Bergen.) Risen Region—coast about Buenos Ayres.

VII. Effect of different coast lines:

On commerce and hence on people. Harbors.

Handwork: Making of clinometer.

Number-work: Comparison of height of bluff and width of beach. By proportion. By fractions. By decimals. Calculation of amount of material brought down by a given stream in a given time. Calculation of size and volume of deltas. Comparison of coast lengths. Proportion of coast lines to areas.

Drawing: Chalk-modeling and pastel-modeling of maps. Sketches of beach scenes on Lake Michigan.

Writing: Reports of field-trips and on special topics connected with the work.

Dramatic Reading: King Lear, Act IV., Scene VI. (Dover Cliff); *The Forsaken Merman*, Matthew Arnold.

Music: *Sea Horses.* (Second Book. Modern Music Series, with *Suggestive Studies*); *September Gale* (Songs of Life and Nature.)

Coast Lines.

CHILDREN'S LIST.

551, D26, Davis, *Physical Geography;* 551, H46, Heilprin, *The Earth and Its Story;* 551, H98, Huxley, *Physiography;* j917, K52, King, *Geographical Readers*, Sixth Book; King, *Geographical Readers*, First Book; King, *Geographical Readers*, Fourth Book; 551.46, R29, Réclus, *The Ocean;* 551.4, S52, Shaler, *Sea and Land;* 551, T19, Tarr, *Elementary Geology;* 551, T19, Tarr, *Elementary Physical Geography;* 551, T19, Tarr, *First Book of Physical Geography.*

Reference Books.

Dyer, *Studies in Indiana Geography;* 551, G31, Geikie, *Earth Sculpture;* 550, G31, Geikie, *Fragments of Earth Lore;* Gilbert, *Lake Bonneville* (United States Geological Survey Monographs); Gulliver, *Shore Line Topography* (proceedings of American Academy of Arts and Sciences, January, 1899, pp. 151–258); 910, M64, Mill, *International Geography*, Appleton, 1900; *Physiography of the United States* (ten monographs by Powell, Shaler, Russell, Willis, Davis, Gilbert, A. B. C., 1898). Salisbury, *Geography of Chicago and Its Environs; United States Geological Survey*, Fifth Annual Report; Willis,· *Conditions of Sedimentary Deposition* (*Journal of Geology*, Vol. 1, p. 476).

Seventh Grade

Katharine M. Stilwell

Geography: The class will visit Dune Park or Miller's Station. They will observe:

I. Topography of the country between here and Dune Park as seen from the car windows.

II. Topography of Dune Park and Miller's Station. At Dune Park they will walk south of the railroad tracks, noting the hills and depressions, their height, distance apart, soil, and vegetation.

They will then go northward to the lake making similar observations. They will measure the inclination of the slopes (using clinometers they have made of cardboard); note the shape, size, composition, and arrangement of the materials in the dunes; observe the work of the wind to-day in the formation of new dunes, the vegetation of the different slopes and the animal life.

At the lake shore they will measure the width of the beach, and watch the work of the waves.

At Miller's Station, in addition to these observations, they will watch the formation of bars, spits, and lagoons. They will collect specimen plants and soil on the ridges, in the depressions, and in the water, and photograph the most interesting features.

The subject will be continued in the class-room. The observations and collections of the children will form the basis of the discussions, which will be supplemented by pictures and reading.

The following topics are suggested as some of those in which the children may be interested:

1. The Chicago plain.

Its appearance and extent. Agents that have affected it.

2. How dunes are made.

Spits, bars, and lagoons.

3. Source of the sand.

Relation to wind.

4. Relative age of these dunes.

Their movement. Proofs.

5. Is the lake advancing or receding? Proofs.

6. What vegetation is found in the various regions?

Why does it differ?

What evidences of adaptation may be seen?

Evidences of earlier vegetation? What is the effect of swamp vegetation on the existence of the swamp? How are these plants distributed?

7. Compare the swamp forms of animal life with the forms of life found on the dunes.

Study their peculiarities of structure and their relation to vegetation.

8. Use of dunes.

Of what use is this region to man? How can it be modified? Effect of dunes in other countries. The Landes, Holland.

9. Deserts.

Appearance of surface. Character of vegetable and animal life. Industries and homes of man. Cause of deserts. Their structure, relation to wind and to bodies of water.

10. The Sahara.

References: *Chicago and Its Environs.* Geographical Society Bulletin. *Ecological Relations of the Vegetation on the Sand Dunes of Lake Michigan.*

Grain from the farm to the shipment.

j600, C48, Chase & Clow, *Stories of Industry*, v. 2, p. 82–99; 660, J72, Johnston, J. F. W., *Chemistry of Common Life*, p. 68–79; j917, K52, King, C. F., *Land We Live In*, v. 4, p. 155–58.

Swamps (description, vegetation, animal life).

550, H56, Herrick, S. B., *Earth in Past Ages*, p. 73-85 ; j590, J73, Johonnot, J., *Glimpses of the Animate World*, p. 142-63 ; T550, L46, Le Conte, J., *Compend of Geology*, p. 75-79 ; 551, T19, Tarr, R. S., *Elementary Geology*, p. 190-92; 551, T19e, Tarr, R. S., *Elementary Physical Geography*, p. 303-4 and p. 339-40; 508.3, T48, Thomson, C. W., *Voyage of the Challenger*, v. 1, p. 340-1.

Deserts (appearance, vegetation, animal life).

581, C85, Coulter, J. M., *Plant Relations*, p. 221-3, 255 ; 550, D16, Dana, J. D., *Manual of Geology*, Ed. 4, p. 50-51 and 160-61 ; 580, G28, Gaye, S., *Great World's Farm*, p. 98-9 and 105-23 ; 551, M36, Marsh, G. P., *Earth as Modified by Human Action*, p. 529-36 and 572-5 ; 551, M64, Mill, H. R., *Realm of Nature*, p. 312-3 ; 916, W58, White, A. S., *Development of Africa*, p. 61-63.

Sahara.

916, K24, Stanford's Compendium, v. 1, p. 171-242 ; 916, W58, White, A. S., *Development of Africa*, Ed. 2, p. 12-18, 55-56, 76 and 172.

NATURE STUDY: I. Our climatic conditions. Daily reading of thermometer and barometer.

Find weekly average of temperature, and trace this isothermal line on the United States weather map.

Compute the amount of moisture in the school room. Compare with the required per cent. Observe the amount of rainfall for the month, and represent by cardboard modeling. Compare this with the United States reports. Make monthly observation (measure), of time and place of sunrise and sunset, and position of sun at noon.

These observations will continue throughout the year, and will form the basis for study of changes in the landscape.

II. Adaptation of life to climatic conditions.

1. Disappearance of animal life; ants' nests, cocoons, etc.

2. Distribution of seeds.

(a) Uncultivated plants. Different pupils may select for study plants in typical areas, such as swamp, prairie, and the sand-dunes. Their observations will be compared, and the relation of structure to distribution determined.

(b) Cultivated plants. The grade will visit a farm and observe the processes of harvesting and threshing. They will learn how grain is prepared for shipment, where it is shipped, and the cost. They will locate the grain areas of the United States and of the world, and the areas of other articles of export.

They will compare the size of these areas, the value of the produce, and the cost of the production, and will find out what determines the market value of these articles.

References: *Life Histories of Plants*, Kerner & Oliver; *Fruits, Flowers, and Leaves*, Lubbock; *Agricultural Year Book*, '96; *Album of Agricultural Graphics*; *Trade Centers*, Chicago Record; *Great World Farm*, Gaye; *Handbook of Commercial Geography*, Chisholm ; *Insect Life*, Comstock.

Adaptation of life to climatic conditions:

551.5, Ar6, Archibald, D., *Story of the Atmosphere*, p. 183-90; 580, G28, Gaye, S., *Great World's Farm*, p. 177-89; 551.5, H31, Harrington, M. W., *About the Weather;* 551, M64, Mill, H. R., *Realm of Nature*, p. 334; 573, T67, Topinard, P., *Anthropology*, p. 385-98.

Disappearance of animal life:

591.9, H46, Heilprin, A., *Geographical and Geological Distribution of Animals*, p. 181-233; 550, H56, Herrick, S. B., *Earth in Past Ages*, p. 206-29; 566, H97, Hutchinson, H. W., *Creatures of Other Days;* 590, T48, Thomson, J. A., *Study of Animal Life*, p. 206-7; 591.9, W18, Wallace, A. R., *Geographical Distribution of Animals*, v. 1, p. 157-66; 591.9, W18i, Wallace, A. R., *Island Life*, Ed. 2, p. 55-71; 575.4, W18, Wallace, A. R., *Natural Selection and Tropical Nature*, New ed., p. 177-8.

Distribution of seeds:

581, B26, Barnes, C. R., *Plant Life*, p. 352-68; 581, C85, Coulter, J. M., *Plant Relations*, p. 112-22; 581, D16, Dana, Mrs. W. S., *Plants and their Children*, p. 52-73; 580, G28, Gaye, S., *Great World's Farm*, p. 246-76.

Roman History: 1. By the use of pictures the class will spend a day in Rome.

2. A visit to ancient Rome.

What we should see.

3. Geography of Rome.

Map and pictures. Influence of its location on its history.

making the hygrometer, the skiameter, and any other apparatus for the room, the students will correlate their manual training. Number work will come through the student's calculating the amount of rainfall over a given area, the percentage of humidity in the atmosphere on a given day, and the number of seeds in a given plant. Records of experiments, descriptions of landscapes, a story of the journey of a thistle-down, or tumble-weed, will bring in written work. The artistic expression will come in the painting of characteristic landscapes, of special plant forms, and of seeds.

A. Plant life.

1. Preparations for winter: (a) Our preparations for winter. Preparations of plants for winter. What eatable plants are you familiar with? What becomes of parts we do not eat?

2. Plant life as affected by weather.

(a) Temperature (use of thermometer; keeping of daily records).

(b) Rainfall (use of barometer and rain gauge).

(c) Humidity (use of hygrometer).

(d) Clouds and cloudiness.

(e) Winds (what are prevailing winds? rain winds?).

(f) Fog, frost, and dew (protection of plants against these conditions).

3. Plant life as affected by sunshine.

Use of skiameter. (a) Length of days and nights at this season.

4. Seed distribution.

1. By wind. 2. By water. 3. By plant itself. 4. By animals. 5. By man.

5. Other preparations of plants for winter.

References for Nature Study: *Nature Study and Related Subjects*, Jackman; *The Great World's Farm*, Gaye; *Plant Relations*, Coulter; *Realm of Nature*, Mill; *Little Wanderers*, Morley; *Seed Travellers*, Weed; *Plants and Their Children*, Dana; *Text-Book of Botany*, Strasburgher, Moll, Schenck and Schimper.

Geography: The subject for the month will be RIVER BASINS.

I. Question the children to find out all they know about rivers. What is a river? Difference between river and canal? Between river and lake? Describe the rivers you have seen. How were they made? Of what use are rivers to man?

II. What rivers flow into Lake Michigan? (see large map of Northwestern States). Influence of Chicago River on Chicago; why are Chicago and Milwaukee larger cities than Evanston and Waukegan?

III. Field trip to Glencoe, where a typical gully may be studied. Children will make a river in the laboratory, and actually see all the phenomena of the river. Illustrated reports of what they see.

IV. Birth of river valley.

(To be worked out in Laboratory).

A. Rainfall on surface of land. 1. Part evaporates. 2. Part sinks below surface. 3. Part flows off over surface.

B. What determines amount of water flowing off the surface?

1. Slope. 2. Porosity of rock. 3. Rate of precipitation.

C. Concentration of water in run-off.

1. Unknown surface. 2. Different texture of surface.

D. Formation of wash or gully.

1. Gully grows in length, breadth, and depth. a. Develops all the way down, but fastest at bottom. Why? b. In breadth by side-wash, gravity, and sapping. c. Deepened by effort of water to get to lowest point, first at mouth of stream, then backward.

E. Limits of growth.

1. Length—extent of land. 2. Breadth—extent of land. 3. Depth—base-level. (Distinction between gully, ravine, and valley.) (Distinction between channel, valley, and basin.)

F. Stages in development of valley.

1. Infancy. (In Laboratory.) 2. Youth: St. Lawrence, Red River of North. 3. Maturity: Mississippi. 4. Old age. Cycle of erosion is what?

V. Rivers of the globe.

1. Rivers flowing through cañons: Colorado, Columbia, Arkansas, Hudson, Niagara.

2. Rivers with deltas and flood plains:

Mississippi, Nile, Yellow, Ganges, Po, Rhone, Rhine, Danube.

3. Rivers in mountainous regions: Durance, Loire, Green, Grand, Kootenai.

VI. Effect of rivers on civilization.

Materials: Pictures from the library, sand, and sand-pans. Painting, drawing, and writing material.

Expression: Sketches of various kinds of river valleys. Sketch of whole river system. Model of river valley in sand. Making of river in laboratory.

Painting: Landscape calendar. River basin. Glencoe. Cañon. Making of picture books to illustrate life of foreign children in Chicago. These books will be made for the use of the fourth grade.

Textile Art: Embroidery of hangings for textile room.

Music: *Corn Song*, text by Whittier; *The Brook*, text by Tennyson; *Harvest Song*, text by Chadwick; *September Gale*, Songs of Life and Nature.

These songs will be taught partly by rote and partly by independent sight-reading.

Physical Culture: Fundamental gymnastics. Games and plays for recreation in and outdoors. Measurements. Physical examination. Sense tests; fatigue tests.

German: Distinction between principal and accessory sentences. Appropriate reading and writing exercises. (See German outline, page 154.)

French: Correlated with study of water and waterways. Study of Chicago River and the water-shed at Oak Park. Excursions to Oak Park and the Desplaines River. The Drainage Canal; its function; possible effect upon the commerce of Montreal. The High School pupils will present to this class, in the form of reading matter, any interesting information they may have collected in a visit to a French village near Kankakee. (See page 151.)

Latin: Roman ideals in relation to early French and German history. Cæsar's Gallic War, Book I, 1, and II, 1-8. References: Harper's Classical Dictionary on *exercitus*, *legio*, *castra*, *Cæsar*, *Gallia*, and *Germany*. The Encyclopedias on *Germany*, *France*, and *Cæsar*. Froude's *Cæsar*, Chapters 1-8 and 14. Warde-Fowler's *Cæsar*, Chapters 1-8. Guhl and Koner's *Life of the Greeks and Romans*, Section 107.

Greek: See outline on Latin and Greek, page 148.

References for Teachers:

Abbott, *Water and Land;* Brown, *Geology;* 910, C541, Chisholm & Leete, *Longman's School Geografy;* Encyclopædia Britannica; 557.92, Un5, Gilbert, *The Henry Mountains;* 551, H98, Huxley, *Physiography;* 376.45, P23, Parker, *How to Study Geography;* 551, R29, Réclus, *The Earth;* 551, S52, Shaler, *Outlines of the Earth's History;* 551, T19, Tarr, *Physical Geography.*

References for Children.

550, B61, Bird, *Geology;* 551, D26, Davis, *Physical Geography;* 551, H46, Heilprin, *The Earth and Its Story;* 551, H98, Huxley, *Physiography;* 501, L92, Lubbock, *Beauties of Nature;* 551, R64, Roberts, *Earth's History;* 551, S52, Shaler, *Outlines of the Earth's History;* 551, T19, Tarr, *Elementary Geology:* 551, T19, Tarr, *First Book of Physical Geography.*

Morning Exercises

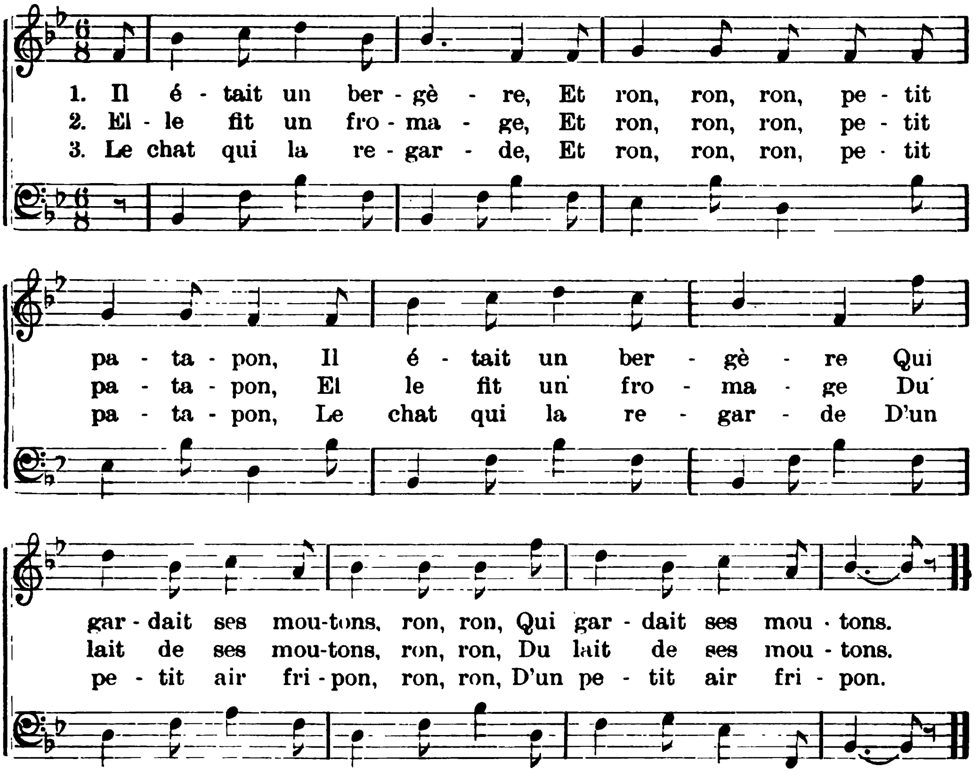
OCTOBER.	SUBJECT.	LEADER.
1.	Helpfulness	Colonel Parker.
2.	Favorite Quotations	Miss Fleming.
3.	Vacation Reports	Miss Van Hoesen.
4.	Science Observations	Miss Cooke.
5.	Summer Pictures	Miss Stilwell.
9.	Chicago	Miss Mitchell.
10.	Current History	Miss Rice.
11.	October	Miss Van Hoesen.
12.	Folk-Songs	Miss Goodrich.
16.	Our Neighbors in Lincoln Park	Miss Hollister.
17.	Fall Coloration of Plants	Mr. Myers.
18.	Rivers in Poetry and Song	Miss Stilwell.
19.	Farm Life in the Fall	Mrs. Atwood.
23.	China (Current History)	Miss Foster.
24.	China (Geography)	Miss Baber.
25.	Home Life	Miss Allen.
26.	Seed Distribution	Mr. Flint.

Historical Events and Birthdays

October 3	George Bancroft	1800
" 4	Battle of Germantown	1777
" 6	Jenny Lind	1821
" 8	Paul Rembrandt	1669
" 9	Chicago Day	1871
" 9	Cervantes	1547
" 10	Benjamin West	1738
" 12	Hugh Miller	1802
" 14	William Penn	1644
" 16	Noah Webster	1758
" 17	Burgoyne's Surrender	1777
" 19	Cornwallis' Surrender	1781
" 21	Landing of Columbus	1492
" 25	Geoffrey Chaucer	1328
" 25	T. B. Macaulay	1800
" 29	John Keats	1796
" 30	Richard B. Sheridan	1751
" 31	Halloween	

LA BERGERE.*

(FRENCH NONSENSE SONG.)


1. Il é - tait un ber - gè - re, Et ron, ron, ron, pe - tit
2. El - le fit un fro - ma - ge, Et ron, ron, ron, pe - tit
3. Le chat qui la re - gar - de, Et ron, ron, ron, pe - tit
pa - ta - pon, Il é - tait un ber - gè - re Qui
pa - ta - pon, El le fit un fro - ma - ge Du
pa - ta - pon, Le chat qui la re - gar - de D'un
gar - dait ses mou-tons, ron, ron, Qui gar - dait ses mou - tons.
lait de ses mou-tons, ron, ron, Du lait de ses mou - tons.
pe - tit air fri - pon, ron, ron, D'un pe - tit air fri - pon.

4

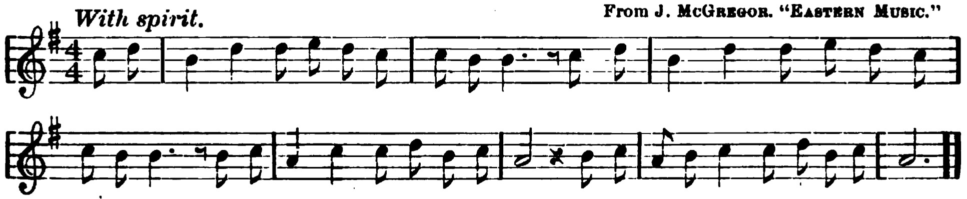
"Si tu y mets la patte,
Et ron, ron, ron, petit patapon,
Si tu y mets la patte,
Tu auras du bâton,
Ron, ron,
Tu auras du bâton.

5

Il n'y mit pas la patte,
Et ron, ron, ron, petit patapon,
Il n'y mit pas la patte,
Il y mit le menton,
Ron, ron,
Il y mit le menton.

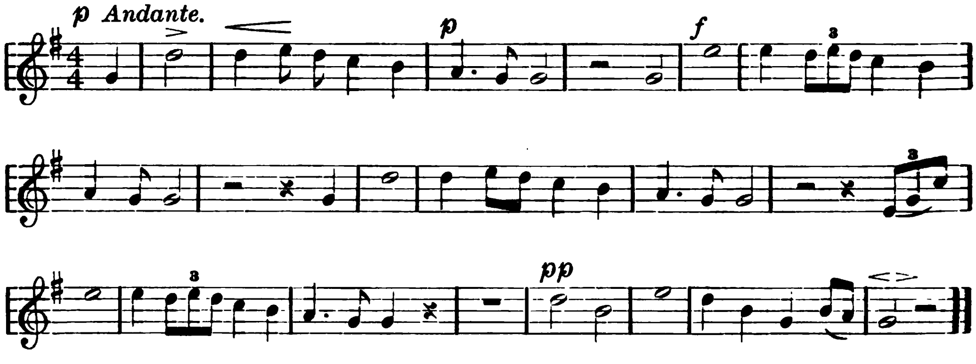
NILE BOAT SONG.

From J. McGregor. "Eastern Music."



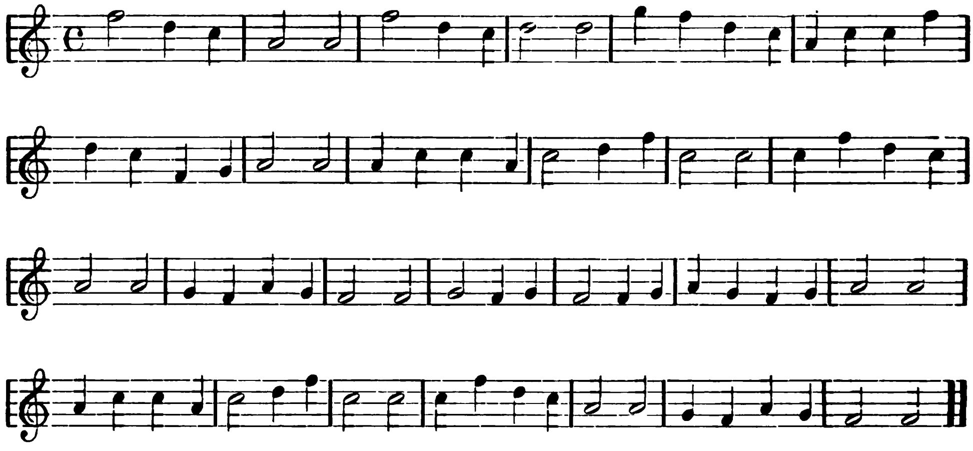
*Note: English text for this song in Book I. "O round and round we're going."

GREEK LULLABY.



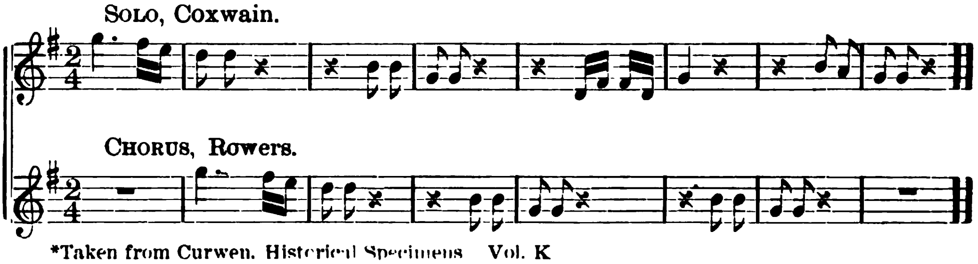
CURWEN, HISTORICAL SPECIMENS. Vol K.

CHINESE AIR.



From NAUMANN, "HISTORY OF MUSIC."

CHINESE SONG OF ROWERS.*



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*Taken from Curwen, Historical Specimens Vol. K

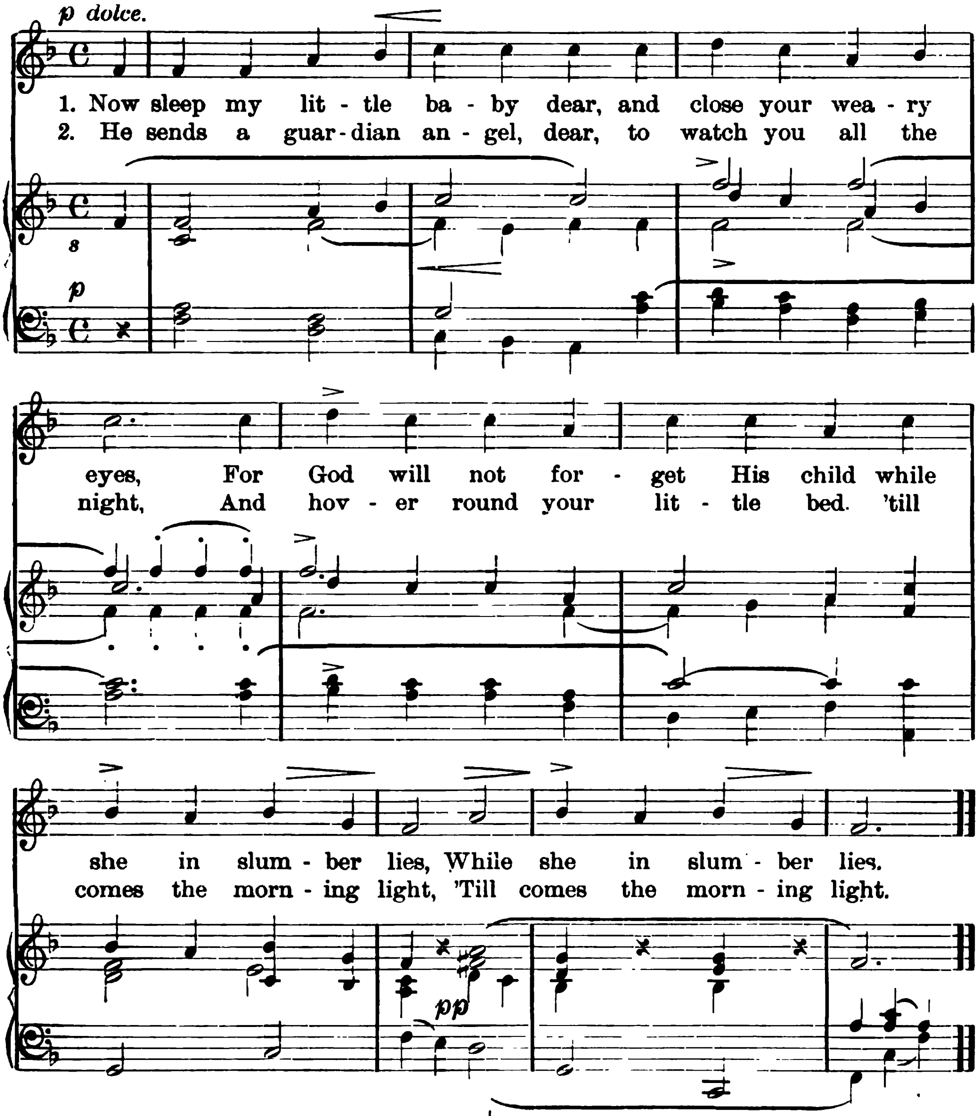
A CRADLE SONG.

(EIN WIEGENLIED.)

OLD GERMAN, 1580.

T. by H. G.

Piano part by DR. REIMANN.

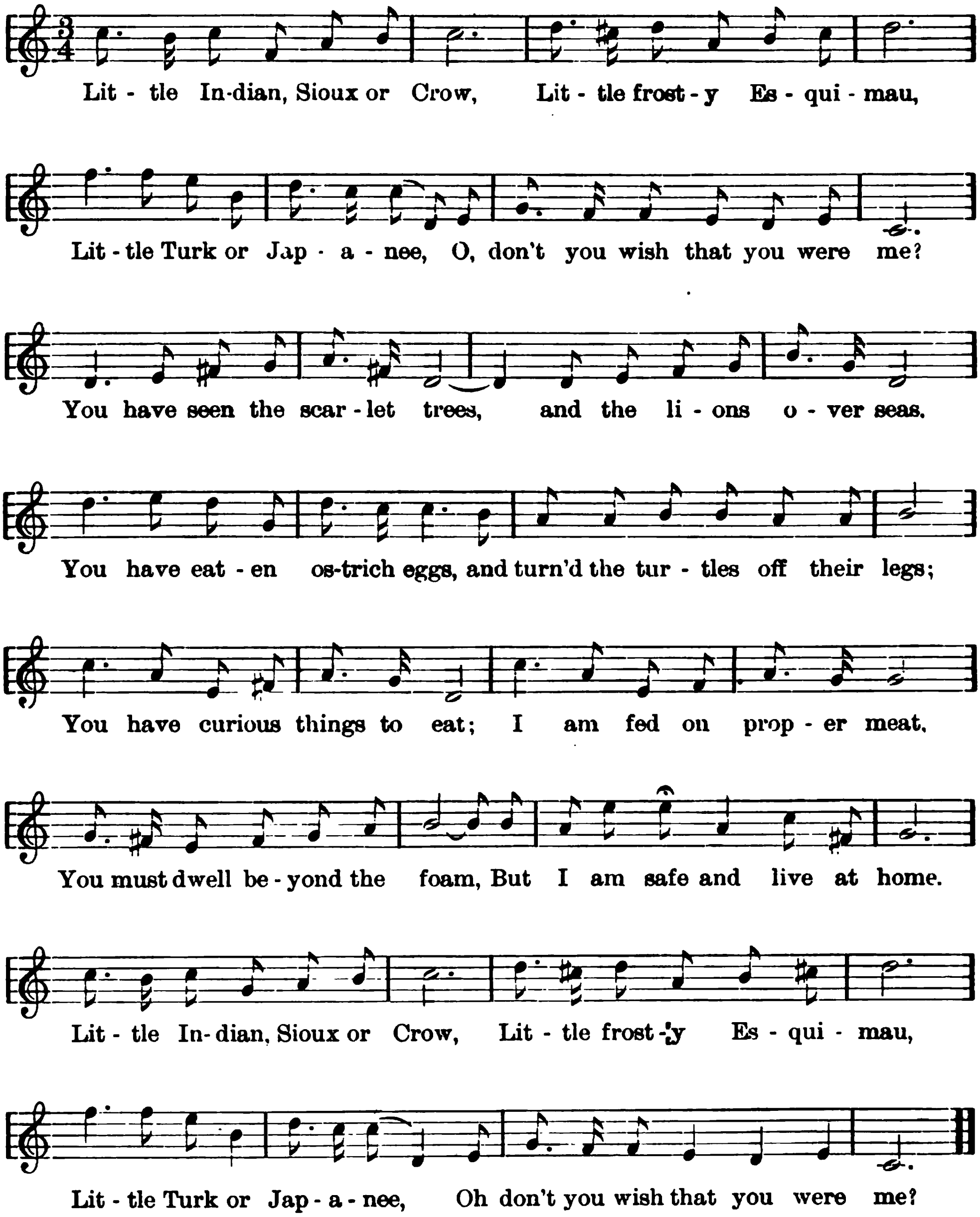

p dolce.
1. Now sleep my lit - tle ba - by dear, and close your wea - ry eyes, For God will not for - get His child while she in slum - ber lies, While she in slum - ber lies.
2. He sends a guar-dian an - gel, dear, to watch you all the night, And hov - er round your lit - tle bed. 'till comes the morn - ing light, 'Till comes the morn - ing light.
8
p
pp

1
Nun schlaf', mein liebes Kindelein
Und thu' die Aüglein zu,
Den Gott, der will dein Vater sein
Drum schlaf' in guter Ruh'.

2
Er send' dir auch sein Engelein
Zu Hütern Tag und Nacht
Das sie bei deiner Wiegen sein.
Und halten gute Wacht.

FOREIGN CHILDREN.*

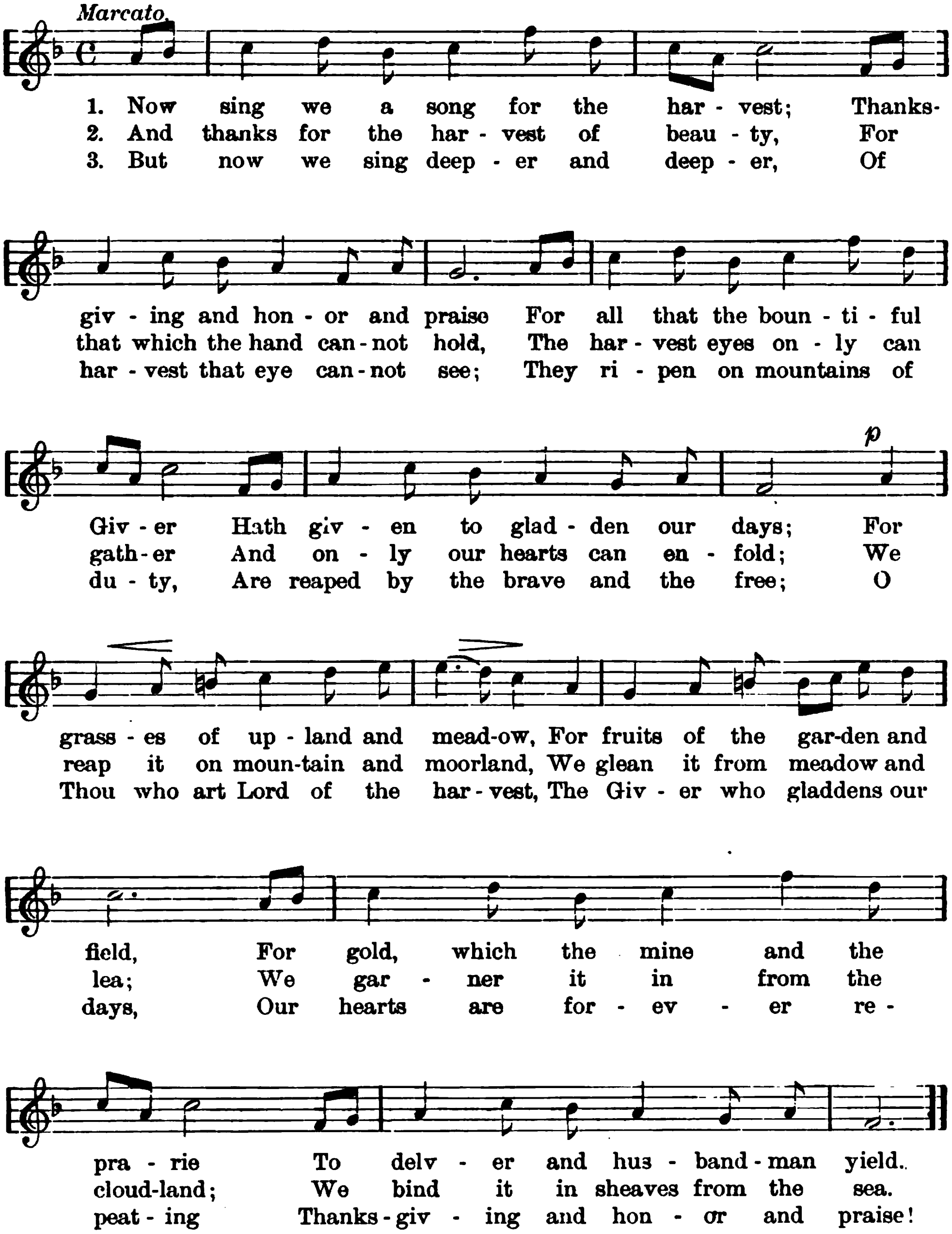
ROBERT LOUIS STEVENSON. **ELEANOR SMITH.**


Lit - tle In-dian, Sioux or Crow, Lit - tle frost - y Es - qui - mau,
Lit - tle Turk or Jap - a - nee, O, don't you wish that you were me?
You have seen the scar - let trees, and the li - ons o - ver seas.
You have eat - en os-trich eggs, and turn'd the tur - tles off their legs;
You have curious things to eat; I am fed on prop - er meat,
You must dwell be - yond the foam, But I am safe and live at home.
Lit - tle Indian, Sioux or Crow, Lit - tle frost - y Es - qui - mau,
Lit - tle Turk or Jap - a - nee, Oh don't you wish that you were me?

*From TWELVE SONGS FOR TWELVE BOYS. Ludden and Bates.

HARVEST SONG.*

J W. CHADWICK. ELEANOR SMITH.


Marcato.
1. Now sing we a song for the har - vest; Thanks-
2. And thanks for the har - vest of beau - ty, For
3. But now we sing deep - er and deep - er, Of
giv - ing and hon - or and praise For all that the boun - ti - ful
that which the hand can-not hold, The har - vest eyes on - ly can
har - vest that eye can-not see; They ri - pen on mountains of
Giv - er Hath giv - en to glad - den our days; For
gath-er And on - ly our hearts can en - fold; We
du - ty, Are reaped by the brave and the free; O
p
grass - es of up - land and mead-ow, For fruits of the gar-den and
reap it on moun-tain and moorland, We glean it from meadow and
Thou who art Lord of the har-vest, The Giv - er who gladdens our
field, For gold, which the mine and the
lea; We gar - ner it in from the
days, Our hearts are for - ev - er re -
pra - rie To delv - er and hus - band-man yield.
cloud-land; We bind it in sheaves from the sea.
peat - ing Thanks-giv - ing and hon - or and praise!

*From Songs of Life and Nature. Scott, Foresman and Co.

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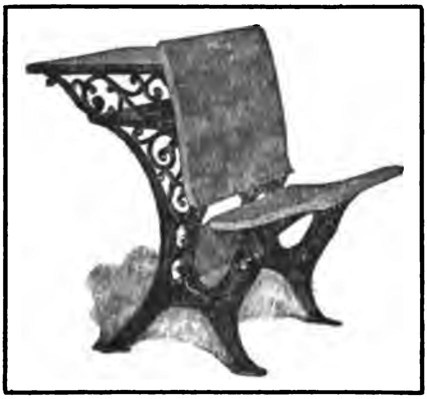

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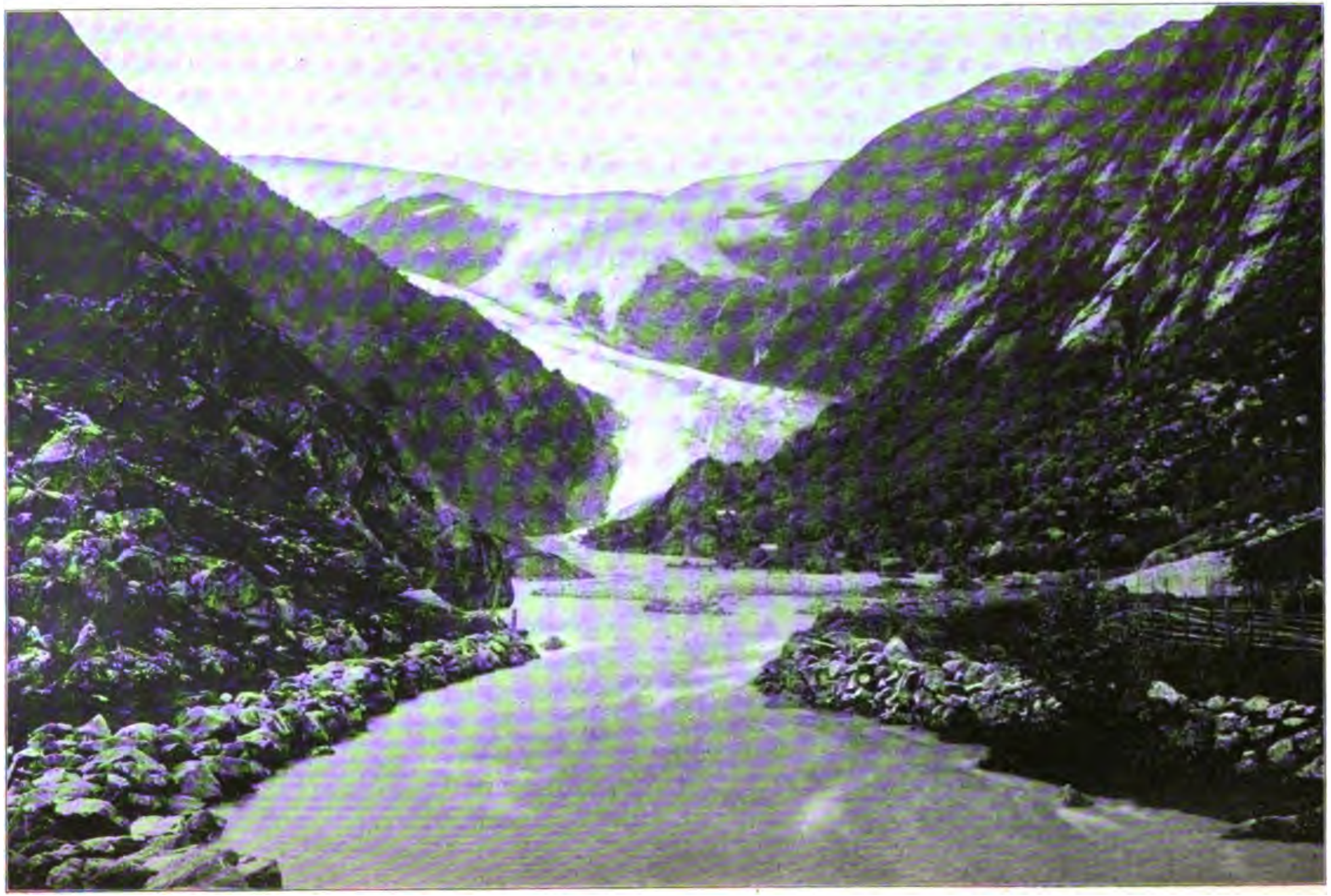

BUARBRAEN GLACIER

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AND PARENTS

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NOVEMBER, 1900

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ATWOOD (In collaboration with Prof. Rollin D. Salisbury) Drift Phenomena of the Devil's Lake Region—Journal of Geology, 1897.

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THE COURSE OF STUDY

A PUBLICATION FOR TEACHERS AND PARENTS
ISSUED MONTHLY—TEN NUMBERS A YEAR.

Geography

Zonia Baber Wallace W. Atwood

Since steamboats, railroads, cables, and telegraphs have almost eliminated distance, man is brought into daily contact with evidences of the different peoples and products of the various parts of the globe. The entire world has become the environment of civilized man. His ability to rightly appreciate, enjoy, and adapt himself to his environment depends upon his knowledge of humanity and of natural law. And it is only by immediate intellectual contact with humanity and the forms and forces of nature that the appreciation of each in its true relation is obtained.

The ability to interpret the meaning of the surrounding landscape and of the world's landscapes makes travel and study a delight; and it is through the sympathetic study of one's own and of foreign peoples that the kinship of mankind is established.

There can be little appreciation of historical events without a knowledge of the geographical stage on which they were enacted. Not only the industries and habits but the condition and appearance of the present peoples of the world are largely due to their geographical environment. The study of geography, then, broadens man's horizon from his immediate neighborhood until it encompasses the entire earth; while geology discloses former geographies, one landscape passing, as in dissolving views, into another. The knowledge of mineralogy, paleontology, meteorology and botany gives detail and definition to the changing scenes.

In the Chicago Institute, throughout all the work, from the lowest grade through the pedagogical school, opportunity will be given, so far as is possible, to witness the processes of landscape-making,—as the action of rivers, wind, frost, rain, waves, currents, vegetation, animals, man, etc., on the earth, as well as the results of the previous work of earth-shaping forces.

Excursions for the purpose of observing man in his struggle to adapt natural forces and objects to his needs, in the cultivation of the soil, the raising of cattle, the felling of forests, quarrying, mining, building of roads, bridges, houses, transportation of commodities, etc., will be made.

The out-of-door and indoor laboratories will be used in the illumination and solution of problems which the field trips and other work suggest.

The following is a general outline for the year's work in the elementary and secondary schools.

FIRST GRADE: In the First Grade during the year field trips to the lake shore, sand dunes, swamp, river, woods, farm, park, zoölogical garden, conservatories, large fruit and vegetable stores and museums, will give an opportunity for a variety of geographical impressions.

SECOND GRADE: The First Grade work will be continued during the second year, and where field trips are impossible, the children will be introduced to other forms of land and water, as mountains, islands and seas, through stories, pictures and models.

THIRD GRADE: Advantage will be taken of the child's interest in steamboats and railroad trains, in the study of the commerce of this city. His desire to reproduce will find satisfaction in building a miniature city. The making of the streets, kinds of pavements, building of houses, street railways, manner of supplying the city with water, light, and heat, the problems of transportation, and the distribution of food and clothing will be treated so far as the subject appeals to the children. The source of much of the food will be found on the farm, where certain phases of its manner of production will be observed.

FOURTH GRADE: The Fourth Grade pupils will continue the work of the Third in tracing to their original homes certain peoples who compose this city, as the Chinese, Italians, and Norwegians. In the consideration of peoples, the young children are interested in the life of other little children, not in the doings, social and political, of grown people. They care to know of the home life, the food, clothing, games, and the school life of the foreign children of their own age; while the higher grades will respond to certain phases of the actions of mature men and women.

They will study the regions which have supplied this city with its building material, food, and clothing, studying the seas and lakes as highways and sources of food supply; considering islands as valuable reliefs in the sea, and giving the simple story of their formation; studying Hawaii as a type of volcanic formation; Bermuda as a coral island; and Cuba as a continental island. The study of coal and of the common metals—iron, gold, silver, copper, tin, and lead—will lead them to the subject of mining.

In the study of the forests of the cold, temperate, and tropical climates they will find the source of the useful woods, foods, and other products in daily use. The domestic animals and the wild animals seen in the zoölogical garden will be traced to their normal habitats.

The pupils will get acquainted with the common building-stones and examine accessible quarries.

FIFTH GRADE: The cause of the general topographical appearance of the landscapes in this region will be found in the study of glaciers. In studying the continent of North America, the ideas of typical geographic areas considered in the previous grades will be correlated, so as to give a picture of the continent as a whole.

SIXTH GRADE: In the Sixth Grade the horizon of interest will be broadened by a study of Eurasia and South America, illuminating the changing landscapes in those countries by the results of a closer examination of the human and physiographic conditions in this locality. Special intensive study will be made of regions which have produced great historic peoples, as China, India, Persia, Palestine, and Europe.

SEVENTH GRADE: A study of Africa, Australia, the islands of the world, and the oceans, will bring the general impressions of the entire earth within the horizon of experience.

EIGHTH GRADE: As the pupils develop in power, a closer study will be made of the subjects under consideration. The accessible regions which have been receiving attention in all the lower grades will present to the Eighth Grade new phases of physiography, geology, mineralogy, meteorology, and political and social conditions.

Basing their work upon the study of streams in this region, they will classify the important rivers of the world as to their influence as land-changing agencies and their influence upon civilization.

The distribution of the world's great mountain systems, its deserts, prairies, and forests, and their effects upon human progress, together with the distribution of the great nations of the earth, with their elastic boundary lines, will receive special attention.

NINTH GRADE: The work of the Eighth Grade will be continued in the ninth year, with a special study of all the physiographic processes and results in this and other parts of the world.

TENTH GRADE: In the closer study of meteorology, the observation and study of the weather conditions in this locality and of the world will be organized; while paleontology will broaden the knowledge of the present life.

ELEVENTH GRADE: In the eleventh year the broad questions of the formation of the world and the changes which have occurred will be considered in the study of general geology.

TWELFTH GRADE: The influence of geography, geology, and meteorology upon the present inhabitants of the earth will be considered in the twelfth year, with a special study of peoples of primitive civilization who now inhabit the earth.

Throughout all the grades simple geological problems, germane to the subject of study, will be considered.

Physiography of the Land

TENTH GRADE: Field trips will be taken each week, as long as the weather permits, and the indoor work will be developed from the field observations. Lantern slides, pictures, maps, and models may also be used.

III. Land forms resulting from stream work.

1. Valleys: (*a*) In youth, (*b*) in maturity, (*c*) in old age.
2. Alluvial cones and fans. Develop story of waste-filled basins of the world.
3. Flood plains. When does development begin? Study of Louisiana region. Settlement and occupation of flood plains.
4. Terraces. Why and when developed?
5. Bars and islands.
6. Deltas. Work out detailed structure in laboratory.

IV. Effect of unequal hardness of material upon valley development.

1. On shapes of valleys.
2. On development of rapids.
3. On development of falls.

V. Accidents to streams.

1. Through piracy. Causes for and examples of.
2. From rising of the land. Develop this from the story of the coastal plain of the United States.
3. From sinking of the land. Develop this from the story of the coastal plain of the United States.
4. From volcanic activities.
5. From glaciation. Find examples as near home as possible.

VI. Erosion history of a region read from its topography.

1. The signs of youth. Study shapes of valleys and of inter-stream areas.
2. The signs of maturity. Study shapes of valleys and of inter-stream areas.
3. The signs of old age. Study shapes of valleys and of inter-stream areas.
4. Rejuvenation. (*a*) causes, (*b*) changes in valleys resulting from rejuvenation.
5. Peneplains.
6. Cycles of erosion.

VII. The influence of the topography during the different stages of an erosion cycle upon the settlement and development of a region. This work will be based upon the study of certain areas, chiefly in the United States, where the relationship of man to his geographic environment is clearly shown.

VIII. Underground water.

Field trip: Examine construction of well, sewer, or basement.

1. Source of underground water.
2. Condition in which it exists.
3. Depth at which it is found.
4. Movement of underground water as shown in springs, streams, and vegetation.

Laboratory experiments showing the amount of water exhaled from certain leaf areas.

5. Effect of underground water on the structure of rocks.
6. Account for the differences in hot and cold springs? mineral and ordinary springs?
7. Formation of common wells; artesian wells.
8. Effect of underground water on topography. In what kind of country rock do sink holes occur?
9. Use of underground water to vegetation, animals, and man. Relation to permanent streams.
10. Relation of caves to underground water.
11. Location of the noted cave regions of the world. Account for their presence.
12. Use of caves to animals; to man.
13. Relation of caves to architectural development.

IX. Study of shore lines.

1. The work of waves.
    (*a*) erosion.
        (1) cliffs.
        (2) cut terraces.
        (3) caves.
    (*b*) transportation.
        (1) by waves.
        (2) by undertow.
        (3) by shore currents.
    (*c*) deposition.
        (1) built terraces.
        (2) brack ridges.
        (3) barriers.
        (4.) spits.
        (5.) bars.
        (6.) hooks.
        (7.) loops.
2. Recognition of ancient shore lines.

References: Davis, *Physical Geography*; Mill, *Realm of Nature*; Geikie, *Elementary Lessons in Physical Geography*; Salisbury, *Physical Geography of New Jersey*; Salisbury and Atwood, *Physical Geography of the Devil's Lake Region*; Russell, *Rivers of North America*.

MUIR GLACIER

CREVASSE, MUIR GLACIER

Third Year, High School

General Geology for November.

The October work in this course covered what is generally known as ***dynamic geology***, including the study of those agents which have always been at work bringing about geologic changes and which may now be studied in the field. This month the general subject will be ***structural geology***, and with the work will be associated the study of regions where the different geological structures exist.

V. The rocks of the earth's crust.

1. Igneous rocks.
2. Sedimentaty rocks.
3. Metamorphic rocks.
   Familiarity with the common rocks of the region should be secured in the field and laboratory.

VI. Igneous rocks.

1. Original positions.
2. Present positions.
3. Structures common to igneous rocks.
4. Metamorphism of igneous rocks.

VII. Sedimentary rocks.

1. Original positions. Where are there any being formed to-day?
2. Conditions for the building of
   (*a*) sandstones, (*b*) limestones, (*c*) conglomerates, (*d*) shales, (*e*) coal.
   How can we account for a series of the above formations, each one lying conformably on the one beneath?
3. Present positions of sedimentary formations.
4. Folding, faulting, and fracturing.
5. Cleavage, joints, and mineral veins.
6. Metamorphism of sedimentary rocks.

VIII. Unconformity.

References: Scott, *Introductions to Geology*; Geikie, *Text-Book on Geology*.

Pedagogical School

I. Glaciers.

Field trips to Stony Island and Glencoe. At Glencoe note:

1. Topography of the regions visited and of adjacent regions.

a. Materials that compose the landscape; 1. Clay, sand, gravel; bowlders; shape, condition and variety of bowlders. 2. Source of material.

b. Agents at present working on this region.

Stony Island: Topography, relative to adjacent regions.

1. Country rock: *a.* Kind; geological formation. *b.* Nature of surfaces; how produced?

II. Location of existing glaciers.

1. In mountains: Alps, Himalayas; Rockies, Andes, Caucasus, Scandinavia, New Zealand. Cause?

2. Polar regions. Cause?

3. Meteorological conditions favorable to the production of glaciers.

4. Appearance of glaciers, including snow fields: *a.* materials; *b.* crevasses—cause; *c.* detritus: 1. source; 2. transportation.

5. Movement of glaciers: *a.* evidence of; *b.* effect upon ice; upon surface passed over.

6. Moraine: *a.* Location in relation to glacier; *b.* material; *c.* topography of drift.

7. Fluvial association: *a.* Surface streams; *b.* basal streams; *c.* effect on associated detritus.

III. Location of extinct continental glaciers.

1. Topography of glaciated region where drift is present? where absent?

2. Relation of lakes of North America and Europe to glacial history.

3. Movement of glaciers. Relation to preglacial valleys.

4. Proofs of different glacial epochs?

5. Effect of continental glaciation on the present industrial condition of affected areas.

Was the glacial epoch beneficial or detrimental to the portion of the United States so affected? What would have been the result had the glacier reached to the Gulf of Mexico? What would be the condition here had the glacier period not occurred?

IV. In what grade would you introduce the study of glaciers if you lived in a glacial region? In a non-glacial region? Why?

What aspect would appeal to the different grades? What should be ignored? Why?

How would you introduce the subject to children in a glaciated region? In a nonglaciated region?

What laboratory experiments, pictures, models, literature would aid the pupil in the study of this subject?

Give plan for teaching the subject to the grade you would like to teach.

References

Russell, *Glaciers of North America;* Geikie, *Ice Age*, Text-Book on Geology; Davis, *Physical Geography; Journal of Geology*, Vol. I-IV; Salisbury, *Physical Geography of New Jersey;* Scott, *Introduction to Geology;* Davis and Shaler, *Glaciers.*

V. Underground water.

For detailed outline, see outline for first year high school.

In what grades should this subject be introduced? Why?

What would be the motive for teaching underground water?

What experiments in chemistry and physics would the teaching necessitate?

What expression on the part of the pupil in drawing, painting, modeling, and making would the teaching necessitate?

Give brief plan for teaching the subject to some grade.

References

Shaler, *Aspects of the Earth;* Shaler, *Brief History of the Earth;* Indiana Geological Reports; Scott, *Introduction to Geology;* Geikie, *Text-Book in Geology;* Dana, *Text-Book of Geology;* Geikie, *Elementary Lessons in Physiology;* Tarr, *First Book in Physical Geography.*

NOTE.—Owing to readjustment of the school program, the courses in meteorology and anthropogeography have been discontinued. If readers desirous of following these courses will address the COURSE OF STUDY, their relationship with the Institute instructors may be continued through correspondence.

Unity in Ideal and Motive

SYLLABUS FOR FACULTY DISCUSSION,
WEDNESDAY, OCTOBER 17, 1900.

Francis W. Parker

I. THE IDEAL.

(a) An ideal school is an ideal community.

(b) An ideal community is that condition of society in which the educative activities of each member are fully and completely engaged.

(c) The end and aim of educative activities is to make the community ideal; that is, the activity of each member of the community is concentrated upon complete living.

(d) The members of the community concentrate upon that work, play, and rest which fills the day with the highest and best life—life that means continuous growth and development of the individual and of the community.

II. ORDER.

(a) Order means the help that one member of the community gives to all the other members. When each member of the community (including the teacher) gives the best help for the good of the community there is perfect order.

(b) Order is the most economical use of personal energy for the good of the whole.

(c) The sole function of the teacher is the organization of ideal community life, the development of sound public opinion.

(d) All rules needed for the government of the community should be the outgrowth of the most careful and thorough deliberation on the part of its members.

(e) The faculty of the school necessarily takes the initiatory steps in such rules.

(f) Each teacher, pupil, and student is responsible for the order of the whole school to the limit of his personal ability.

(g) The harmony of a school means the comprehensive understanding and complete application on the part of each of the rules thus made. The exercise of that charity and courtesy which is intrinsic in the best individual life is the beauty of community life.

III: The teacher is a model citizen of a school community.

1. Every teacher should be a model housekeeper, taking the best care of books, apparatus, and all materials, and exercising always that economy which is needed for the highest efficiency.

2. The teachers should be prompt in the performance of their duties, prepare for every recitation, attend all meetings; in fact, do what they require their pupils to do; for instance:

3. The teachers should attend the morning exercises and join heartily in them, so as to give a strong impulse to a good day's work.

4. Whenever there is a request for a report, a question to be answered on paper, an outline or syllabus to be made, it should be done promptly in the best possible manner and on time. This rule should be obeyed without fail, sickness or other unavoidable disabilities alone preventing.

5. All the rules and regulations of the school should be strictly and impartially carried out by each teacher.

IV. CONCENTRATION OF EFFORT.

Educative concentration is the bringing to bear of all the powers of the mind and the soul upon the one ideal of citizenship, community life, complete living.

1. There should be full, hearty, and complete recognition, approval and indorsement on the part of each teacher of the value of every other subject of thought or skill that is taught in the school.

2. This recognition can be brought about in various ways:

(a) By constantly drawing upon the knowledge and skill gained in other departments and other grades, and so calling attention to their use and relation. For instance, how absolutely necessary a knowledge of geography is to the study of history. Use history in teaching geography; science in teaching all subjects; different modes of expression to reënforce thought, and mathematics for accuracy and clearness of thought.

(b) By questioning pupils closely to find out what power they have gained in other departments or grades.

(c) By indorsing cordially and warmly in all class-work every related subject, thus leading to its use in correlation with the subject in hand.

V. Each teacher should be the active, energetic assistant of every other teacher.

1. Each teacher should try to get clear and distinct ideas of the relative value to his own subject of all other subjects.

2. To this end, each teacher should visit and inspect the work of all the faculty. They should visit classes whenever possible. The least depreciation of the work of another in the school has a malign influence.

3. Each teacher should make genuine, open, and frank criticisms to the teacher whose work seems open to criticism, and should bring the criticisms, when necessary, before the faculty. All differences of opinion should be brought before the faculty.

4. A teacher should be careful not to give snap judgments or opinions that are not supported by the soundest principles.

NOTE.--A specialist is generally modest, careful and cautious in regard to the subject which he is really studying, but too often confident and presumptuous in regard to subjects of which he knows little or nothing. A teacher may succeed in one subject, and through his success feel that he is competent to judge all others. Thus many teachers hinder growth by not recognizing the value of subjects they have not studied. If there is a subject taught in the school which is not of intrinsic value, both in itself and in its relations to other subjects, the teaching of that subject should be criticised and its weakness exposed in faculty meeting.

VI. Each teacher should make every other teacher his active, energetic assistant.

1. The teacher of a subject should use all possible means at the weekly meetings, and in all his teaching, to permeate the faculty with the value of what he is teaching.

2. He should present the principles and methods of his subject, explain and defend them.

3. He should criticise the work of the school, and show where, in his opinion, his subject is not used to the best advantage.

4. He should get all the teachers in the faculty to assist him in his particular teaching. For instance, the teacher of writing should insist in every possible way that every other teacher should be also a teacher of writing. The same may be said of drawing and painting, and, in fact, of all subjects. The teacher of psychology should see that the fundamental laws of mental action are followed in their application and educative work. It will be understood that none of these ends can be brought about by command or by fixed rules. Each teacher must get every other teacher to assist him because he has the power to make the others understand the intrinsic value of his work.

VII. Modes of expression and physical training.

1. Every teacher should be a teacher of physical training. He should see that his pupils are in the best possible condition for mental and moral action. The air, the seats, the general hygienic conditions should be the care of every teacher, and physical exercises should be used whenever and wherever needed.

2. Teachers of whatever department or grade should be persistent and successful teachers of speech and all that pertains to it; of articulation, punctuation, melody and harmony of language; should be keenly alive to any defect, physical or mechanical, of oral language that obstructs the expression of thought.

3. Every teacher should be an indefatigable teacher of grammar, of correct language both in speech and writing; should discover the idioms that pupils use incorrectly, and use the best means to destroy bad habits in language.

4. Every teacher in reading should give constantly pedagogical instruction in oral reading whenever and wherever it is necessary.

5. The same may be said of all other modes of expression. The teacher should require the best possible penmanship at all times; should use drawing, modeling, painting, and making whenever necessary.

6. The teacher should strive to improve himself in each and all of the modes of expression. He should be constantly practicing in order to enhance skill.

7. The teacher should have excellent taste in all the modes of expression; should follow constantly the great fundamental law of ease; should be able to discriminate between the intrinsic expression of thought and the mere imitation or copying of forms of expression.

8. Every teacher should appreciate the pedagogical benefits of music; should bring it in whenever needed.

9. However unskillful the teacher may be in any mode of expression, he should at least indorse highly and strongly that mode of expression as a potent means of education.

NOTE.—If thirty teachers in the school should join heartily in the teaching of penmanship in the best possible way, and the thirty-first teacher should be indifferent to the teaching of writing, it would be impossible to have the best writing in the school, for pupils will, as a rule, unconsciously indorse the teacher allowing poor work.

VIII. Child Study.

1. The greatest good that can possibly come out of the united study of the faculty is the presentation by teachers of thorough, careful, and scientific studies of individual pupils.

2. When several teachers are teaching the same pupils, a comparison of notes concerning individuals is of great value.

3. Physical defects should be discovered as soon as possible.

4. Mental diseases induced by wrong education should be thoroughly diagnosed and then discussed by the faculty.

5. The motives of pupils should receive the most thoughtful attention.

6. The invariable rule is that the better you understand a pupil, the better you are able to teach him. Each member of the faculty studies a pupil from a personal standpoint; thus the opinions of all furnish the best basis for a correct diagnosis.

IX. Pedagogical contributions of each teacher.

1. Each teacher is in his laboratory (classroom) day by day, constantly studying, examining, inspecting, watching the movements of his pupils, constantly preparing lessons and determining their outcome. He must, therefore, make continual discoveries, discoveries of principles, of methods, of details.

2. No teacher can teach a day without making observations which are of intrinsic value to all the faculty.

3. It follows, then, that each teacher should form a habit of contributing all he knows to the whole faculty in the faculty meetings or in private conversations.

Psychology

Francis W. Parker

Students are again reminded that the study of psychology demands persistent, careful, and prolonged examination of the facts in consciousness. Hitherto we have studied, with some degree of success, the world external to consciousness. Now has come the time, if we are able, to study our internal invisible world, the mind.

The beginnings of psychology are to most persons obscure and confusing. It is a long and very important step from the observation of external objects to the perception of subject-objects, or images. Such study requires steadiness of will, reliance on self, and perseverance through obscurity to clearness.

The purpose in the beginning is to give students many points from which to start investigations—points adapted to the abilities of different students. It is not necessary for every student to pursue the same line; in fact, it is well for each student to pursue the line that appeals to her, and then contribute the results for the good of the whole class.

Read carefully over again the "Suggestions," Vol. I, No. 1, COURSE OF STUDY, and "Suggestions," Vol. I, No. 2. Hold yourself in readiness to answer questions such as the following:

How many and what lines of investigation have you followed?

What inferences have you made? State the facts from which you draw the inferences. Images acquired outside of school study? Images acquired in school? Of which have you the more? Which are the more valuable? What is the test of the value of an image? Is an image knowledge? Why? Why not? What is the conscious basis of all description? Describe experiences. Describe a book you have read. Take each study you have pursued in school—geography, history, etc.—and ascertain what remains to you of each study. What part of the knowledge you have acquired consists of images? If you have no images of a subject, for instance, an epoch of history, what knowledge have you of that epoch?

What are the external causes of images?—visual, auditory, tactile, motor.

Classify objects in relation to their effect upon consciousness.

What is reading?

What experiments have you tried in order to ascertain what goes on in consciousness when you read?

What is the function of a word? Experiments? Of a sentence?

What is the difference between the function of a word and the function of a sentence?

What happens in consciousness when a word is learned?

Hold images in consciousness and make many experiments with them.

Recall what happened when you were holding images.

State any external means by which you were assisted in holding images.

Holding images assisted by the action of external objects is ATTENTION.

There are three modes of attention named by the action of different classes of objects. What are they? Define each mode.

Can you hold images without the direct and immediate action of external objects? Experiment.

What goes on in consciousness when you analyze an object?

Recall your daily lessons and note what changes have come about in your minds.

Pedagogics

Make a special study of IX, "The Recitation," Vol. I, No. 1, p. 24. Take the syllabus sentence by sentence, and verify or reject. Be ready to give reasons why. If the statements seem true to you, realize them in your classes. A frank statement of ignorance may require courage, but such a statement would assist all your classmates. How?

Class Notes on Psychology

Taken by Angeline Loesch

Division I

T stands for the Teacher, Colonel Parker—C for the Class.

T. The laboratory for Psychology is your own mind, i. e., consciousness. Try an experiment. Think of the house you first lived in. How many have had an experience? Describe it.

C. I could see a broad hall with a staircase. I could see a small, brown painted house set in among the trees.

T. "I see" means that I am conscious of something. That something of which I am conscious is in my consciousness.

Experiment: Ink-bottle held up before the class.

T. What is happening now?

C. I see the ink-bottle.

T. Is the ink-bottle in your consciousness?

C. Yes—no, not the bottle itself, the picture of it. Same fact found to be true of chalk, box, watch.

T. Can you give an account of your earliest childhood memories? What are those memories? Images? What have you left from your study of geography? Images? Of what?

C. Of places. Of maps. Of pages in the book.

T. Can you place yourself on the Acropolis and look south? North? On Pike's Peak?

Descriptions showed that the students held vague images—for the most part incorrect.

T. What is left from your study of history?

C. Images of pages in the book.
Of places.
Of events.

T. But events are images of places and people. What would be a working knowledge of the history of the United States?

C. A series of related images from the beginning to the present time.

T. What is left from a novel?

C. A series of images.
But from history, or a novel, long after images are gone, principles are left.
Can you think without images? How about dreams? Are there not images then and no thought?
Feeling comes with images.

T. Before or after?

C. Can you have images of which you are not conscious? i. e., what of habits; of automatic acts?

T. Might some images be so short that it would be almost impossible to remember their presence? Are not automatic acts preceded by images of movement?

Experiment: Watch held up before class.

T. Does this object act on, i. e., change your consciousness?

C. Yes.

T. Does your consciousness act on, i. e., change the object?

C. No, object remains the same.

T. What are the occasions of conscious images?

C. In general terms, objects. In particular, vibrations of ether, i. e., external color; vibrations of air, i. e., sound.

T. Four kinds of images, visual, auditory, tactile, motor. Tactile has the advantage over other senses because its end-organ is the whole surface of the body. Objects are acting on us and we have the products in our consciousness, the images corresponding to those objects. Can you have an image of an object you have never seen?

C. Yes, when you read.

Experiment: The word "goose" written on the blackboard.

T. Is the written word a material object?

C. Yes, because it is made of material, has length, breadth, and thickness.
No, because it is intangible; one cannot take hold of it.

T. Then a star is no object. The spoken word is also an object. It has been photographed. Conclusion: everything external to us, except another consciousness, is an object.

Division II

T. "I see" means that I am conscious of something. That something of which I am conscious is in my consciousness.

Experiment: hat shown.

C. Not hat, but image of hat, is in my consciousness.

T. "I hear" means I am conscious of something.

C. Are sounds images in consciousness?
Are results of education images?
Results of education are more than that. The feeling of inspiration to do, responsibility, a moral effect, is left besides images.
Why do you sometimes recognize after a few pages that you have read the book before?

T. Are images knowledge?

C. An image is not knowledge because the child has images of the moon, but calls them several moons. The image is right, the inference is wrong. Therefore an image is not knowledge.

Conclusion: Rightly related images are knowledge.

T. What have you left from Geography? Images? Examine and see if you have any real image of a place never seen by you. Have images gathered in school, or out, the more influence? What is the difference between in and out of school images as to number, vividness, and usefulness? Is there a state of consciousness without images?

C. Am I conscious when asleep? Is not fright a state of consciousness without images?

After fright you remember what you saw and how you felt; are they both images?

What is to be said about aches, for example, toothache?

Some aches are so bad you can almost see how they look.

T. Objects act on consciousness and create images.

Experiment: Word "pig" written on blackboard.

T. Is it an object?

Discussion and conclusion: Yes.

T. Does it create an image?

C. Yes.

But some words do not create images.

T. What if a man had no images except those which acted directly on his sense-organs?

C. Then he could not hear language, nor read.

T. What two great classes of objects act on consciousness?

C. Direct and indirect.

Words written and spoken are examples of indirect objects.

T. When an object acts continuously for some time on consciousness, what is the common name of the process?

Various answers given: Thought, concentration, education, learning, attention.

The name, observation, was not given, but attention, because it was so closely akin to observation, was discussed.

T. What is attention? What happens when you give attention?

C. When you give attention all other objects are driven out.

T. How can you drive out?

C. Only by filling in.

Attention is holding images in consciousness.

T. What happens when you hold an image?

C. Other images come in.

An image grows and becomes clearer when held.

Pedagogy

Bertha Payne

The teacher's function is to surround the children with conditions for growth. These conditions bring certain influences to bear upon the children; they react upon these influences in various ways. The kind of reaction is one test of the value of the influence. We look for certain kinds of response to the external influences. Among those that we count as fundamentally valuable are: Inquiry, attempts to make, art expression in all forms, and efforts at co-operation. The teacher herself is one of the conditions; yet she stands back of the conditions, and watches the reaction of the children to the influence. On the other hand, she may lead at times, may become a factor in directing their activity further than their own impulses would have carried them.

The problem that arises here is: "Where shall she lead and where follow?"

Experience furnishes the mental food; work and play are the modes in which experience is assimilated and turned into energy. Experience must be controlled by the teacher, that the right nutrition-substance may be furnished at the right time. Exercise in work and play must be directed into the most helpful and economical channels. The selection of experiences and consequent partial control of influences, together with the direction of energy in expression, is the teacher's function throughout the whole field of education.

If these principles hold true in regulating the relation of teacher and pupils—the youngest as well as with the oldest—their acceptance sweeps away all barriers between kindergarten and school; one educational law for the kindergarten and another for the first grade becomes illogical.

The only legitimate distinctions that can be recognized will be those called for by the stage of development.

What is a stage of development ? If we should trace the growth of a child from infancy to adolescence, what periods of physical growth should we find ? Are there any corresponding, or related, mental periods of development ? Does a group of children in the kindergarten ranging in age from three to six years include more than one stage of growth ? These are some of the questions that come up in investigating the typical conditions necessary for growth.

In the kindergarten the teacher's problem is just that of every teacher. She must study the children and study the conditions; she must find the fundamental needs and ways to satisfy them. She must learn to recognize the distinctive characteristics and needs of the children in certain stages and the peculiar traits and needs of particular children. After this she must plan an ideal environment for her little community. The children themselves are her laboratory. She can find little help apart from them save in the laboratory of her own consciousness. This inner field of investigation furnishes the type of all activity at all stages, but each stage has its own variations in the form of predominating images and impulses.

The limitation in the number and fullness of children's images is the determining factor in our choice of conditions for each group.

The impulses to act in certain ways partly determine the form of exercise which shall be guided by the teacher. Two questions follow: What are the controlling impulses to activity at three years and at six ? What is the range of images and what have these images to do with action at each stage ?

Pedagogics of Nature Study

Wilbur S. Jackman

Query: What is the relation of Nature Study to Natural Science?

In the earlier days of Nature Study in the elementary schools, men of science were strenuous in their protest against calling either the subject science, or its methods. The objections urged may have been valid in some degree against the crude or rudimentary methods employed in the beginning, but they cannot be successfully maintained against the study when properly conducted. Nature Study, well planned, is scientific, and it differs not a whit in its essentials from Natural Science. The obvious truth of this may be shown easily by a consideration of the matter and method in both.

1. In Natural Science the subject-matter is found in the great domain of nature; earth, air, sky, and water are the sources of the materials studied. Outside of these, in Natural Science, there is nothing to study.

2. In Nature Study the materials are derived from the same exhaustless realm.

3. In Natural Science the study rests upon the personal investigations of the student, and it is his own observations that measure the rate and amount of his progress.

4. In Nature Study, no less than in Natural Science, personal investigations and observations are fundamental.

5. In the study of Natural Science the senses are of primary importance.

6. In Nature Study, the use of the senses is no less essential.

7. In Natural Science the student seeks through a study of natural phenomena the law or laws that express the order of the whole.

8. Nature Study, properly understood, suggests to the youngest child some relationships that give a clue to law. The suggestion of law is the only natural stimulus in any study. The age of the pupil is irrelevant.

There is no natural dividing-line, therefore, between the student of Natural Science and the pupil in Nature Study. The motive, matter, and method in Natural Science and Nature Study are the same, but in instruction there are differences in the application of the common principles.

1. The child's senses are untrained; he observes less of detail than the better trained student of nature.

2. In Nature Study larger masses, therefore, must be presented to the child than would be necessary in the case of the advanced student. The sights must be more striking, the weights, relatively, heavier, the movements more pronounced, the functions more obvious.

3. In Natural Science the better trained student discovers minuter details and recognizes more delicate relations.

4. Hence to the beginner the outdoor study is of maximum and the laboratory is of minimum importance; but to the advanced student, if he can carry his outdoor experience with him, the laboratory becomes relatively of greater importance.

5. Quantitative results in Nature Study are possible and proper in any particular field of study where the student of Natural Science would find it necessary to obtain them. But where the advanced student might obtain the desired information by the analysis of a single leaf, or of a drop of water or an ounce of earth, the beginner in Nature Study must use bushels, gallons and pounds. This for two reasons: First, the beginner must deal with large quantities if he is to image properly; and second, the liability to loss during the experiment, owing to lack of skill in manipulation, is greater. True Nature Study, therefore, is Natural Science, and its methods are all scientific. The student in the latter should not find it necessary to unlearn, ignore, or forget what he learned in the former.

Physiology of Nutrition

Ira B. Meyers

(WITH SPECIAL REFERENCE TO THE HUMAN BODY.)

Ninth Grade: The Physiology for the quarter is a study of the animal organism as related to nutrition.

The structure of the digestive organs of any animal is determined by the nature of the food consumed. The food material is more or less solid and insoluble, and is for the most part of a composition differing from the tissues it is intended to build or repair. The function of the organs of digestion is to change the food so that it may be utilized by the tissues of the body.

This series of changes involves two processes—a physical one by which the food is triturated, moved along the digestive tract, and mixed with certain fluids, and a chemical process which changes insoluble substances into soluble ones, thus modifying the food in such a way that the larger part eaten passes directly or indirectly into the blood.

To understand the problems involved in these processes, structure and function must be studied together. Knowing that an animal lives on solid food is sufficient to explain the need of teeth; knowing the physical nature of the food, and the animal's method of prehending it, explains variations in position, form, and size. That this solid food must be reduced to a liquid state explains the need of watery secretions, but to understand the action of these several secretions on the food demands a knowledge of the nature of the food-stuffs (proteids, carbohydrates, fats, minerals), and the effect of these secretions upon each class.

The effort in this course will be to trace the various relations of the digestive organs and their secretions to foods.

Materials used in the quarter's study: Skulls of dog, cat, sheep, hog, squirrel, man.

Models of stomachs of dog, cow, hog, man.

Microscopic slides showing sections of various glands, organs and tissues.

Manikin of the human body (Auzoux).

Dissection of small animal showing organs of digestion.

References: Foster, *Text Book of Physiology;* Martin, *The Human Body;* Colton, *Manual of Physiology;* Orton, *Comparative Zoölogy;* Atwater, *Chemistry and Economy of Food.*

U. S. Experiment Station Bulletin, No. 21.

Outline of Course

I. Prehension of food.

1. Various means in which animals seize their food.
2. Influence upon the animal's habits.

II. Examination of teeth of the various animal skulls.

1. Structure of teeth.
   (*a*) Variations in different animals.
   (*b*) Variations in the same animals.
2. Relation of lower to corresponding upper teeth.
3. Movement of lower jaw.
4. Mechanical effect on food of the animal.
5. Special study of human teeth.

III. Insalivation and swallowing.

1. Function of saliva. Salivary glands, location, structure. Rate of secretion.
2. Muscular action of tongue, cheeks, etc., in mastication.
3. Œsophagus. Structure, muscular action.

IV. Stomach.

1. Location. Structure, form, movement, secretions.
2. Food changes in stomach.

V. Intestines.

1. Structure, position, movements, secretions.
2. Food changes in intestines.

VI. Mechanics of absorption.

Chemistry

Alice P. Norton

Eleventh and Twelfth Grades: The course will be presented in a way to give a definite purpose to the chemical investigations. Individual work will be done and the special interests of each pupil considered.

The work for October and November will consist of:

I. The study of autumn fruits and leaves.

1. Determination of composition as to (*a*) Water. (*b*) Combustible substance. (*c*) Ash.

The amount of water present to be ascertained by weighing, drying, and weighing again. Comparison of amount of water in different fruits and in fresh and dry leaves; students to devise, if possible, a method for collecting and condensing the moisture driven off, part of dry substance to be preserved for future use. A weighed portion to be burned and the percentage of ash or mineral matter calculated. The ash to be preserved for future investigation.

2. Determination of amount of water that dried substance will take up under different conditions of time and temperature. Principle of stewing of fruits. Has fruit or leaf been restored to original condition? Why?

3. Study of water. Properties. Effect of heat upon it. Determination of boiling point and freezing point. Effect upon each of substances in solution. Analysis of water by electrolysis, and beginning of study of component parts.

II. The study will be used also as a means to show the nature of chemical change and to illustrate the province of chemistry.

Physics

Charles W. Carman

First Year, Pedagogic School: During the month of October an effort to make applications of the principles of Physics involved in the study of metereological phenomena developed the need of preliminary laboratory work and class-room discussion.

Accordingly the work for the present month has been arranged as follows:

THE BAROMETER. (a) The work of Torricelli and Pascal. (b) Classic experiments repeated. (c) Mercurial barometers. (d) The transmission of pressure through liquids. (e) "Lifting pumps." (f) Aneroid barometers. (g) Some laws of pneumatics. (h) Formula for measuring heights by means of the barometer. (i) Barometer readings on high buildings, water-towers, on the "high bridge" in Lincoln Park, and on the Ferris wheel, which is admirably designed for such an exercise. Readings made at the end of each minute during a revolution are not only interesting, but also furnish valuable data for studying the principles involved in the construction and use of the barometer. A curve constructed from such readings is very expressive.

THE THERMOMETER. (a) The laws of the expansion of matter, in its various states, applied to the construction of thermometers. (b) The same applied to meteorological changes. (c) The composition of the air. (d) The movements of the air. (e) Some physics involved in weather forecasting.

The Course of Study

It is the purpose of THE COURSE OF STUDY to present in theory and practice a full exposition of the work of the Chicago Institute in the Academic and Pedagogic schools. This exposition will be continuous, and will consist of outlines of the work done in all grades and departments, prepared by the teachers of the grades and departments. Issued every school month, there will be ten numbers a year, none appearing during the vacation months of August and September.

The COURSE OF STUDY will be at once the curriculum, guide, and text-book of the students in the Pedagogical School, and a means of preparation for all persons who propose to attend the Chicago Institute. It is also intended to meet the needs of those parents who care to know, month by month, the theory and details of the work of their children in the Academic School. Persons who wish to study the new education will find many practical suggestions as to the application of its fundamental principles to daily schoolroom work.

History and Literature

Emily J. Rice

(*Continued from October Number.*)

High School, Second Year

Mediaeval History: It is thought best to cover only the field of Mediæval History in the second year and Modern History in the third, including English History in these more general subjects. The usual plan is to go over the entire ground of Mediæval and Modern History in the second year and review this ground by the study of English History in the third year. We shall follow the general trend of European affairs in Mediæval times, and the great movements of the period. The history of France is the natural center of the work and will be made the basis of study, but emphasis will also be placed upon the development of the English government. The subjects suggested for October and November are the decline of the Roman Empire and the invasions of the Teutonic Barbarians.

Third Year

Modern History: This year's work will begin with the Renaissance and include in a general way the field of Modern History. We shall make an attempt to trace in this complicated period the economic, social, and political conditions that have had most influence upon our own times. Special emphasis will be given to the development of English institutions.

The subjects for October and November are the revival of learning and art, and particular attention will be paid to the discovery of America and the great movements in Renaissance Art.

Fourth Year

American History, Economics, and Civics: This year we shall consider some of the leading principles of economics and civics, and confine our work in history to recent times, and especially to subjects relating to our own country. The work will begin with observation and classification of the industries of Chicago and its trade relations.

The course outlined above has been arranged to continue throughout the four years, because any less extended work would in our opinion fail to secure the ends for which history should be studied. The course of one year in General History common in our schools gives the pupils an opportunity to do little more than memorize poorly digested facts. The result is that their tastes, feelings, and actions remain uninfluenced by their study. More time must be given to the subject in order that the pupils may gain such a knowledge of their social and political environment as will affect their habits of thought and action. A continuous course in history of four years, with related literature, was adopted in 1883 in the High School department of the Cook County Normal School, and the experience of several years proved its value.

The correlation of history and literature not only saves much time, but also adds to the effectiveness of each of these subjects. Since the ideals of man are expressed in literature, the use of this source of knowledge is necessary to any adequate conception of the character of an age. An arrangement of literary masterpieces corresponding with historic epochs is also a great aid to the teaching of literature, for the background of history throws much light upon the meaning of essay, poem, or story. English composition, although taught with all the other subjects, will be especially related to literature ; and literary selections not correlated with history will be used whenever required for that work. It is thought, however, that the course in literature is sufficiently full to meet the demands of the department of English.

It is also intended to relate the work in history as closely as possible to art, geography, and the foreign languages. Economics and civics will be studied in connection with history rather than as separate subjects. To teach civil government mainly with history secures the best results, because the present form of institutions can be comprehended only by tracing their origin and growth. As far as possible, the work in history will be correlated with every other subject of study.

The following is a more detailed list of subjects, arranged by quarters and months, for the High School course. This is planned in a general way, as the work will be outlined for the monthly publication, but may be modified as occasion requires :

COURSE OF STUDY

First Year, Ancient History

First Quarter: Primitive Culture. Oriental Civilizations. Greece.

October: Primitive Culture. Mythology. Lowell's *Rhœcus*, *Finding of the Lyre*, *Shepherd of King Admetus*, and *Prometheus*.

November: Egypt. Mythology. Longfellow's *Prometheus*, *Pegasus in Pound*, and *Enceladus*. Tennyson's *Aenone*.

December: The Homeric Age. The Iliad. Longfellow's *Masque of Pandora*.

Second Quarter: Greek History.

January: The Spartans. The Iliad. Tennyson's *Lotus-Eaters* and *Ulysses*.

February: The Athenians. The *Antigone* of Sophocles. Tennyson's *Dream of Fair Women* and Byron's *Isles of Greece*.

March: The Age of Pericles. Plato's *Apology* and *Phædro*. Schiller's *Gods of Greece*, and Mrs. Browning's *Dead Pan*.

Third Quarter: Roman History.

April: Early Rome. Macaulay's *Lays of Ancient Rome*. Hawthorne's *Marble Faun*.

May: The Republic. Shakespeare's *Julius Cæsar*.

June: The Republic. Shakespeare's *Julius Cæsar*.

Second Year, Mediæval History

First Quarter: The Roman Empire.

October: Decline of Empire. *Meditations* of Marcus Aurelius.

November: Teutonic Barbarians. Carlyle's *Hero as a Divinity*.

December: Franks and Mohammedans. Carlyle's *Hero as a Prophet*.

Second Quarter: Mediæval History.

January: Charlemagne. The Saxons. Tennyson's *Idylls of the King*.

February: The Norman Conquest. Chaucer's *Canterbury Tales*; the *Prologue*.

March: The Feudal System. Chaucer's *Knight's Tale*. Scott's *Ivanhoe*.

Third Quarter: Mediæval History.

April: The Mediæval Church. Shakespeare's *Merchant of Venice*.

May: The Growth of Towns. Shakespeare's *Merchant of Venice*.

June: The English Government. Shakespeare's *Merchant of Venice*.

Third Year, Modern History

First Quarter: The Renaissance.

October: The Revival of Learning. Shakespeare's *Macbeth*. Byron's *Childe Harold*, Fourth Canto.

November: The Revival of Art. Shakespeare's *Macbeth*.

December: The Reformation. Shakespeare's *Macbeth*.

Second Quarter: Modern History.

January: National Governments. Milton's *Minor Poems*.

February: Political Revolution. Macaulay's *Essays on Milton and Addison*. *The Sir Roger de Coverley Papers*.

March: Political Revolution. Selections from poems of Burns and Carlyle's *Essay on Burns*. Coleridge's *Rime of the Ancient Mariner*.

Third Quarter: Modern History.

April: The French Revolution. Selections from Wordsworth. Dickens' *Tale of Two Cities*, or Goldsmith's *Vicar of Wakefield.*

May: Epoch of Reform. Selections from Shelley.

June: Anglo-Saxon Expansion. Tennyson's *Princess.*

Fourth Year, American History, Economics, Civics

First Quarter: American History.

October: Period of Discovery and Colonial History. Lowell's *Columbus* and *A Glance behind the Curtain.* Shakespeare's *Hamlet.*

November: Colonial History. Whittier's *Snow Bound.* Shakespeare's *Hamlet.* Cooper's *Last of the Mohicans.*

December: The Revolution. Burke's *Conciliation with America.* Shakespeare's *Hamlet.*

Second Quarter: American History.

January: Critical Period. Emerson's *Essays.*

February: Westward Movement. Ruskin's *Of King's Treasuries.*

March: Slavery Question. Selections from Lowell's Poems.

Third Quarter: American History.

April: Industrial Development. Tennyson's *Locksley Hall.* George Eliot's *Silas Marner.*

May: Industrial Development. Selections from Robert Browning's Poems.

June: Industrial Development. Matthew Arnold's *Sohrab and Rustum*, *Self-Dependence and Progress.*

Professional School

First Year

It is intended to make this work a practical study of the subject-matter and methods of the elementary school. It will be necessary to consider first the fundamental principles underlying the teaching of history, and then the outline of the course. After this has been done, the students will investigate the subjects useful for lessons with the little children. This will necessitate a study of Primitive Culture. The students will also begin the related handwork of the industrial arts, especially pottery and textiles.

In literature the work will include typical stories of different nations and periods of history, principles of presentation of these stories to children, relation of literature to history and art, observation of model lessons, and writing of stories.

Second Year

In this year we shall follow the chronological order of history rather than the order of the subjects as taught in the grades. The aim of the work will be to consider methods of historic study, and to give a fuller knowledge of the subject-matter. Having learned in the first year what they need in order to teach history, the students will study with especial purpose. They will be expected to plan work for teaching more independently than before and to give more lessons. The course in the High School may also be considered by those who desire to prepare to teach in secondary schools. The literature for this year will be correlated with history as in the High School, and especial attention will be given to oral reading and dramatic representation.

Applied Algebra

George W. Myers

ACADEMIC DEPARTMENT: The work for November will consist mainly of the geometrical representation of equations. The equations studied last month were brief expressions of simple laws of physics and mechanics. One ($v=gt$) is a statement of the law which connects the velocity (v) of a falling body with the time (t) during which the body has fallen. Another ($f=mx$) is the law which connects the force with the mass and acceleration of a body which moves under the action of a varying force. In the first case v and t and in the second, f and x are changing continuously, while $g(=32.16\text{ft.})$ and $m(=\text{mass moved})$ remain fixed. And so it is with every algebraic equation. In the equation $y=x$, if $x=1$, y must equal 1; if $x=2$, $y=2$; if $x=2\frac{1}{2}$, $y=2\frac{1}{2}$; if $x=10$, $y=10$; if $x=a$, $y=a$, and so on indefinitely. Any value between those used here might be put equal to x, whereupon y would be equal to the same value. Hence, we see that there are an indefinitely great number of pairs of values for x and y. The equation merely says that whatever value x may have, y must have the same value.

Again, in the equation $y=3x+4$ we have merely an abbreviated statement of the law that whatever x may be equal to, y must equal 4 units more than its triple. It is clear, then, that the numbers of arithmetic (in the last equation the 3 and 4) differ from the numbers of algebra (the x and y) in that the arithmetical numbers have a fixed value, while the algebraic numbers have variable values. Numbers like the x and y, or the v and t, or the f and x, which in a given equation may vary, are called *Variables*. Numbers which always have the same values are called constants.

Principle—An algebraic equation is a brief statement of the law in accordance with which two or more variables are supposed to change.

Note.—It may be that in a given case only one pair, or a limited number of pairs, of the values of x and y are wanted. But we are seeking to make clear what the equation means and all it means. This can be done only by making it very plain that both x and y may have an indefinitely great number of values in one and the same equation.

To make the true meaning of the equation very clear will be the purpose of this month's work.

Axiom 1—If the same quantity, or equal quantities, be added to, or substracted from, equal quantities, the results will be equal.

Illustration—If $x=y$, then $x+a=y+a$; or if $x=y$ and $a=c$, then $x+a=y+b$.

Axiom 2—If equal quantities be multiplied, or divided, by the same quantity, or by equal quantities, the results will be equal.

Illustration—If $x=y$ and $a=b$, then $ax=by$; or if $ax=by$ and $a=b$, then $x=y$.

An algebraic expression is any symbol, or symbols, of quantity, or any number of such symbols connected or affected by symbols of operation. An algebraic expression, of course, represents a number.

Symbols of operation are the signs of addition (+), subtraction (−), multiplication (×) or the period (·), division (÷, / or —), involution (the exponent), and of evolution (the radical sign, $\sqrt{\ }$,).

The parts of an algebraic expression connected by the plus and minus signs are called the terms. Terms are similar when they contain the same literal factors. Otherwise, they are dissimilar.

Any two number-symbols, which represent the same or equal numbers, when written one to the left and the other to the right of the symbol of equality (=), form an equation. The two number-symbols are called the members or sides of the equation, and they are distinguished as the right member (or side) and the left member (or side).

An equation is said to be satisfied, or verified, when by replacing one or more of its literal quantities by arithmetical numbers the two sides become identical, or the equation is reduced to an identity.

To solve an equation for any particular quantity may mean either of two things, viz.:

1. To find the arithmetical number

which substituted for the quantity in question will satisfy the equation; or,

2. To express the quantity in question in terms of the other quantities in the equation.

Problems

Plot the graphs of the equations below on cross-ruled paper. Use the side of one or more of the squares as the unit for plotting.

A graduated scale, a right line pen, a fine steel writing pen, some black, red, and blue or green India ink, and an irregular curve will be needed.

Direction: Use heavy black lines for the axes, blue or green lines for the graphs and dotted red lines for the x- and y-distances of plotted points, which latter should be inclosed in small red circles.

Remark.—In plotting graphs it is usually, though not always, advantageous first to solve the equation for y, then to assume any desired values for x and compute the corresponding values of y.

Equations of Type I: Form $F=\mu R$ (law of friction), or $v=gt$, or $v=gt+v_0$ (law of falling bodies); Type form is $y=mx+b$; (a) $y=2x$; (b) $y=5x$; (c) $y=-4x$; (d) $2y=3x$; (e) $-2y=3x$; (f) $2y-3x+4x-y=0$; (g) $2x+y-3=5$; (h) $\frac{x+y}{3}+2x-3y+1=3$; (i) $y/x=5$; (j) $x/y=-2$; (k) $\frac{6x-3y}{2}-\frac{4x-5y}{3}=\frac{5}{6}$.

Equations of Type II: (A) $v^2=2gh$ (flow of water from orifices) and $t^2=\frac{2}{9}.S$ (falling bodies). Define and teach exponent, square root and radical sign. (a) $y^2=x$; (b) $3y^2=12x+3$; (c) $y^2=x+3$; (d) $\frac{y^2}{2}+x-2=1$; (e) $y^2=-7x$. Type form is $y^2=ax+b$.

Equations of Type II: (B) $f=(\frac{1}{2r})\,v^2$ (centrifugal force) $S=\frac{1}{2}\,ft.^2$ (accelerating forces) or $S=g_2t^2-S_0$ (falling bodies); (a) $y=x^2$; (b) $y=3x^2-2$; (c) $y=2x^2+5$; (d) $2y=6x^2-4$; (e) $y=6x^2+3x+4$.

Type form is $y=ax^2+bx+c$.

Other practical equations of this type are the following:

$P = 100C^2$ is the formula for the safe working load of manila ropes (hemp ropes and tarred hemp ropes).

$P = 600C^2$ is for iron wire rope of 7 strands (19 wires to the strand).

$P = 1000C^2$ is for steel wire rope of 7 strands (19 wires to the strand).

$P = 12000d^2$ is for open link chains, and

$P = 18000d^2$ is for stud link chains where P is the safe working load in pounds, C the circumference of the rope in inches, and d is the diameter of the link in inches.

Plot these equations and read off from your diagrams the dimensions of ropes and chains needed to bear various given loads.

Equations of Type III: Form $X^2+Y^2=R^2$. (Relation of a force to its rectangular components. Fundamental equation of mechanics.) (a) $x^2+y^2=4$; (b) $3x^2+3y^2=27$; (c) $x^2/2+y^2/2=2$; (d) $3x^2-2y^2+4x^2+9y^2=28$.

Equations of Type IV: Form $Ax^2+By^2=C$. (Planetary orbits; Law of Kepler.) (a) $x^2+9y^2=9$; (b) $4x^2+16y^2=64$; (c) $4x^2+25y^2=100$; (d) $x^2+12y^2=12$.

Equations of Type V: $Ax^2-By^2=C$. (Cometary orbits; Law of expansion of gases.) (a) $x^2-y^2=4$; (b) $3x^2-4y^2=12$; (c) $-4x^2+50y^2=200$; (d) $5x^2-3y^2=15$; (e) $xy=12$.

Simultaneous equations are such as are satisfied by the same pair, or pairs, of values of the variables.

Plot on the same axes the following pairs of equations, draw in full red lines the x- and y-distances of the crossing points of the graphs and scale off their lengths.

$$\text{(a)}\ \begin{cases} y-x=2; \\ x^2+y^2=25; \end{cases} \qquad \text{(b)}\ \begin{cases} x+y=4; \\ x^2+y^2=25; \end{cases}$$

$$\text{(c)}\ \begin{cases} y^2=x; \\ 5y-3x=-2; \end{cases} \qquad \text{(d)}\ \begin{cases} 16x^2+4y^2=64; \\ x^2+y^2=9; \end{cases}$$

$$\text{(e)}\ \begin{cases} 4x^2+16y^2=64; \\ x^2+y^2=9; \end{cases} \qquad \text{(f)}\ \begin{cases} y^2=x; \\ x^2+y^2=20; \end{cases}$$

$$\text{(g)}\ \begin{cases} 4x^2-16y^2=64; \\ x^2+y^2=25; \end{cases} \qquad \text{(h)}\ \begin{cases} 9x^2-16y^2=144; \\ 9x^2+25y^2=225; \end{cases}$$

What kind of graphs were found to represent equations of Type I? of Type II (A)? of Type II (B)? of Type III? of Type IV? of Type V?

The absolute term of an equation is the term which does not contain a variable. (How does an alteration of the absolute term of an equation affect the graph? An alteration of the coefficients of the variables? Of the exponents?)

It will now appear that a line represents an equation when the x- and y- distances of every point in the line satisfy the equation and when no other points do have distances which satisfy it. For this reason a graph is sometimes termed the *Locus* of the equation.

Here develop the algebraic methods of solving simultaneous simple equations and compare results with those furnished by the foregoing geometrical methods. As a preliminary means to this, the use of the parenthesis, the fundamental operations, factoring and fractions must be learned.

Pedagogic School

SEVENTH AND EIGHTH GRADE MATHEMATICS—STUDY OF FORCE.—CONTINUED. A fuller development of the method of studying force than could be given last month will be worked out here.

A force is completely known when we know (a) its magnitude or intensity, (b) its direction or sense, and (c) its point of application.

Statics is the Theory of Equilibrium. When three forces, acting upon a free point, just balance, or produce no movement of the point, they are said to be in equilibrium. The point is said to be at rest.

When three such forces are in equilibrium their magnitude and direction may be represented by the three sides of a triangle (triangle of forces). The triangle is, therefore, fundamental to Statics.

But since any one of these three forces just balances the joint effect of the other two, if one of the forces were removed the point would move under the joint action of the other two precisely as though it were acted upon by a single force equal in intensity and opposite in direction to the force removed. Hence, the Theory of Motion (Dynamics) is also based upon the triangle.

If any number of forces act upon the same point at the same instant (concurring forces), their combined effect (their resultant), may be found by the successive use of the principle of the parallelogram of forces as shown in the cut. The successive segments of the broken line $OP_1R_1R_2R_3R_4$, etc., represent in magnitude and direction the forces whose combined effect will produce equilibrium (Polygon of forces).

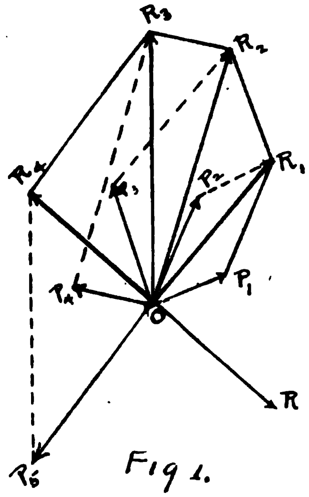
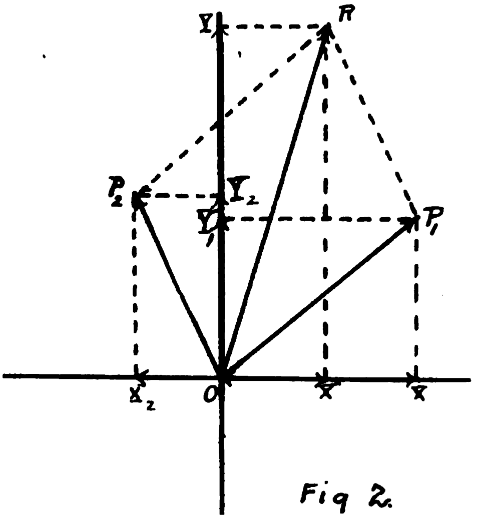


Fig 1.

Study here rectilinear figures concretely, speaking of the sides and angles of the figures as the magnitudes and directions of forces.

A more general method of studying forces is that suggested by this figure:



Fiq 2.

It is at the same time simpler than the former, as it makes the right triangle fundamental. Explain the method and make a concrete study of the right triangle.

The parallelogram is inserted in the figure to show the agreement of this and the former method.

The third figure shows that this method

applies to any number of forces. Explain how. Define Resolution of forces, Composition of forces, and Transmissibility of forces.

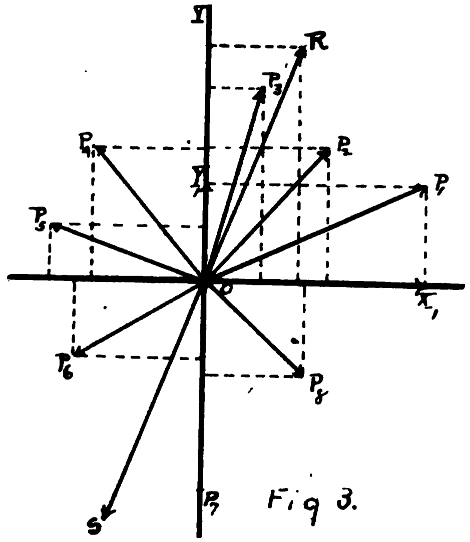


Fig 3.

In connection with the last figure define Conspiring forces, and explain and discuss the algebra of compounding them.

With the aid of the fourth cut show the difference between the problem of treating forces acting upon a point and forces acting upon a body.

Obviously the two forces acting at the points where these letters stand tend not only to move the body forward, but they tend to turn it, to rotate it as well. The single force, the resultant, acting at *M* does not in this case produce the same effect as do *P* and *Q* acting jointly. Under the action of *P* and *Q* the motion of the body would be composite, consisting of a translation such as *R* would produce, and at the same time of a turning motion.

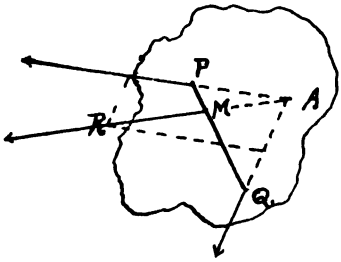


Fig. 4

When two oppositely equal parallel forces act as shown in this figure the resulting motion is only a rotation. Such a pair of forces (*v FF*, Fig. 5) is called a *couple.* The tendency of a force to turn a body about a point is called the ***Moment*** of the force with respect to the point, and it is measured by the product of the force by the perpendicular distance from the point to the line of action (the line along which the force acts) of the force (*a P* of Fig. 5). This Moment is taken as positive when the tendency is to turn the body upward and to the left, and negative in the opposite case. The Moment of the couple is either force (*F*) multiplied by the shortest distance between the lines of action of the two forces (2 *a*).

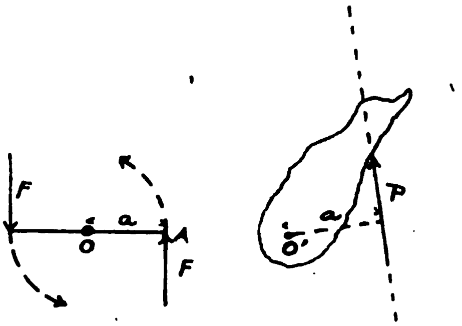


Fig. 5.

Here bring out the algebra and geometry of moments. The moment is represented geometrically by a line drawn perpendicular to the plane of the turning through the point (*o* or *o'*), about which the turning is considered, and containing as many units of length as there are units in the moment.

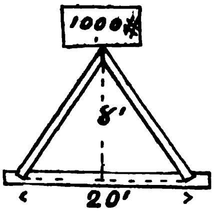
The problem of finding the center of gravity of geometrical forms is interesting and important. The significance of the center of gravity can be best understood by making a preliminary experimental study of a system of parallel forces acting upon a body, by the aid of an apparatus such as is shown in the cut for parallel forces given last month. By its help the resultant may be directly measured, the tendency to turn demonstrated, and the point of application of the resultant found.

It will be readily comprehended that the weight of a heavy body results from such a system of parallel forces, being merely the attraction of the earth for each particle of the body toward the earth's center of gravity, which is so far away that we may regard the elementary forces as parallel. To find the center of gravity is merely to find the balancing point of this set of forces.

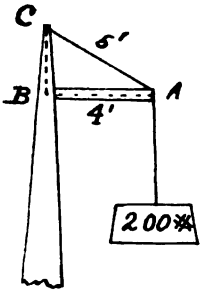
Here take up the geometry of finding the center of gravity of various geometrical figures.

The tendency of a tree or tall structure to fall under the force of the wind will furnish a practical application. What resists or overcomes this tendency (fiber stress)? Numerous applications will suggest themselves.

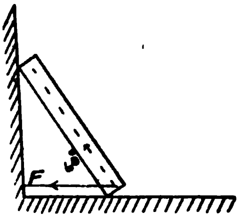
Exercises.



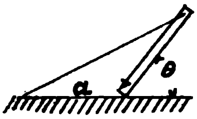
1. Find stress in rafters.



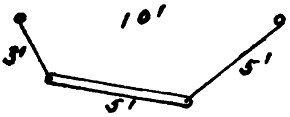
2. Find stress on A B and on A C.



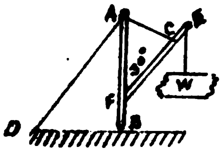
3. The beam weighs 150 pounds. It leans against a smooth wall, and is prevented from sliding by the string or by the force of friction, F. Find F, or the tension in the string.



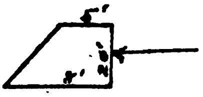
4. Weight of beam = W; length, l. String or guy, attached at distance b from bottom end, and at distance a to the left of the lower end. Find tension in string. Use particular values first.



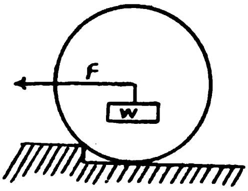
5. Weight of beam = 100 pounds. Find the tension in the strings, also the angles the strings make with the vertical.



6. Boom, F $E = 30'$; A $B = 40'$; C $E = 7'$; B $F = 5'$ and $W = 1000$ pounds. Find stress in A D, also in A C.



7. Fourteen cubic feet of masonry weigh one ton. Find the force at the middle point that will overturn the wall.



8. Radius of wheel = r. Find F required to pull it over an obstruction of height h. Use particular values first.

Home Economics

Alice Peloubet Norton

The work in home economics for the pedagogic school began with a full and free discussion of the meaning and scope of the subject. The fact was emphasized that the home is inclusive of the family as well as the house, and that the management of the home means far more than housekeeping. The following outline was presented as suggesting the various subjects which are legitimately a part of the science of home life:

I. The Home.

1. Historical development.
2. Relation to other social institutions.
3. Function in society.
    - (a) Propagation.
    - (b) Location and defense.
    - (c) Production and transmission of wealth.
    - (d) Intellectual and social training.
    - (e) Ethical and religious training.

II. Formation of the home.

1. The Family.
2. The House.
    - (a) Location and surroundings.
    - (b) Domestic architecture.
        1. Plan.
        2. Foundations and cellar.
        3. Plumbing and drainage appliances.
        4. Heating and ventilating apparatus.
        5. Lighting.
    - (c) Domestic art.
        1. Floors and walls.
        2. Furniture.

III. Maintenance of the Home.

1. Care of house for cleanliness.
    - (a) Care of plumbing.
    - (b) Heating, ventilating, and lighting.
    - (c) Removal of dust and dirt.
2. Food.
    - (a) Selection.
        - Food materials.
        - Dietaries.
    - (b) Preparation.
        - Cooking and serving.
    - (c) Dangers.
        1. Adulterations.
        2. Meat and fruit supply.
        3. Milk supply.
        4. Water supply.
3. Clothing.
4. Home nursing.

IV. Administration of the Home.

1. Relation of different members of the family.
2. Training of children.
3. Domestic service.
4. Financial management.

In a consideraton of the various names proposed for this work, such as domestic science, domestic economy, home science, household economics, household arts, objections were raised to each one, and "home economics" was suggested as on the whole the broadest and best for the general subject.

A discussion followed of the place which this work should hold in the school curriculum, particularly in the grade school, and the purpose with which it should be taught. Its intimate connection with the lives of all makes it especially valuable in training for good citizenship. Cooking or housekeeping, as a trade, or a subject set apart by itself, without relation to other work, has no legitimate place in an ideal educational scheme; but the life of the home, including the household industries, may be so related to all other work, so interwoven with all the interests of the child, as to become an essential part of his training. The extent to which this may be done is indicated in some measure in the various grade outlines. French, art, number work, nature study, have been brought into close connection with the home industries. An interesting plan is that of making the luncheon period a means of training the children in some of the simplest principles of the care of the home. The pupils of the lower grades set the table for their luncheon, clear it, and wash and wipe their dishes, doing their work by committees, and taking great delight in it.

The need of work which shall elevate the ideals of home life was clearly brought out by a comparison between the homes of to-day and those of the past. It is unfair to compare, as is often done, the worst or even the mediocre homes of to-day with the best of the past, but no one can deny that there are serious dangers threatening the home, and that these can only be avoided when the community is educated to the highest ideals of home life, and to a sense of its paramount importance. In this education the teacher must take a prominent part, and a clear idea of the function of the home and its place in society is therefore essential.

Any complete study of the subject involves a knowledge of sociology and of the structure of society, and at least a superficial understanding of them is necessary. The following outline given by Professors Small and Vincent will aid in the right conception of the work of the home:

Classification of Social Functions

(a) Propagation. (b) Location or Settlement, (c) Defense against Nature. Animate and Inanimate. (d) Production of Wealth.	The Sustaining System.
(e) Transportation (and Exchange). (f) Apportionment of Wealth (g) Transmission of Wealth.	The Transporting System.
(h) Discovery, Invention, Technical Applications. (i) Communication of Psychical Impulses. (j) Intellectual Training (Transmission of Knowledge). (k) Discipline (Ethical and Social Training). (l) Control (Co-ordination of Activities).	The Regulating System.

A study of the "distribution of these functions among social agencies" shows the family to be more or less actively concerned in nearly all the work of society. Good homes are essential to the well-being of the nation. Good citizenship implies good home-making. The teacher of any branch of home economics must be imbued with this ideal if she would do the work that is best worth while.

As stated in the October number, the subject chosen for study and laboratory work for the first part of the year will be food, including its source, composition, and nutritive value, as well as its preparation. After the isolation of the different food principles, the classification of foods and the study of water as previously outlined, the following topics will be considered:

IV. Mineral Matter.

Kinds, where found, food value, and use in body. Solubility in water, and inference as to cookery of vegetables containing mineral salts. Comparative solvent power of hard and soft water. Quantitative determination of mineral matter in milk.

V. Starch.

Composition, source, value as food, test. Microscopic examination of starch grains from various sources. Effect of heat. Popped corn. Effect of different degrees of heat conveyed by means of water. Comparative study with microscope of mixtures of starch and cold water, starch and water heated to 60° C., starch and boiling water. Cookery of cereals.

VI. Change of starch into sugar. Classification of carbohydrates.

References

Small and Vincent, *An Introduction to the Study of Society*, pp. 237-250, American Book Co.; Annual Reports of Divorce Reform League, 1890-98; Church's *Food*, Chapman and Hall; Matthieu Williams, *Chemistry of Cookery*, Chap. XI, Appleton & Co.; American Kitchen Magazine, Vol. IV, p. 218; Vol. V, p. 228; Vol. VI, p. 179; E. H. Richards, *Food Materials and their Adulteration*.

For the work in the grades see Miss Cooke's outlines. In the upper grades the work for this year will follow closely that laid down for the lower grades, since the present classes have had no work of the kind. It will of course be carefully adapted to the ability of the children.

The Home-Maker's Course

In addition to the pedagogic and academic courses the school offers an opportunity for those who are not preparing to teach to take special courses in home economics.

Home-making is to-day the only profession for which the most superficial training is generally considered more than sufficient; yet home-making in its highest and best sense is more than a trade, or group of trades; it is entitled to rank with pedagogy and law and medicine. It is a profession worthy of the best talent and the most complete training. A two years' course, embracing a variety of subjects under different teachers, specialists in their own departments, will constitute a professional school for home-makers. The requirements for admission will be practically the same as for entrance to the school of pedagogy, the equivalent of a high school course.

The course will include work in the natural sciences which find especial application in branches of home economics, chemistry, physics, biology, bacteriology, physiology, hygiene, and the botany of food plants. The work in these will be applied in the study of the sanitation of the house, including its situation, its drainage, ventilation, and heating, and the general care for cleanliness; in the study of food, its composition, cost, and nutritive value, its selection and preparation, and the calculation of dietaries; and in the study of the physical well-being of the family, including home nursing.

Art will form an important part of the work, and will be applied to house architecture, and to the decoration and furnishing of the house, as well as to textile fabrics and clothing. Economics and mathematics will both be used in the study of the financial management of the home, the question of the division of the income, and the keeping of accounts. The domestic service problem will be studied from the standpoint of economics.

The care and training of young children is one of the most important duties of the home-maker, and involves some knowledge of psychology and of educational methods, as well as of literature.

Power to handle material, control over things, is essential for the best management of the house, and this will be given by work in sloyd as well as in the household arts of sewing and cooking.

The best training of the individual will be kept in mind throughout all the course.

For those who cannot take so complete a course as that outlined, there will be special classes meeting twice a week for work in sanitation, in house decoration, and in food, including cookery.

A full outline of the work in all courses will be given in the December COURSE OF STUDY, with the names of instructors.

Cooking in the Primary Grades

Flora J. Cooke

In the outline for the grades it will be seen that during the past month the children have visited a farm and studied the storing of crops and the various ways of preserving fruits and grains for use in the winter.

In the dramatization of the story of the first Thanksgiving, the primary children will try the primitive Indian ways of grinding, cooking, and preserving corn.

The cooking for the lunch in the primary grades, as described in last month's COURSE OF STUDY, will be confined to three cereals—corn, rice, and wheat. With the help of museum specimens, pictures, and selected and prepared reading lessons the children will discuss the manner of growth and harvesting of these grains and the processes by which they are prepared for use as food. The extent of this work in each grade will depend upon the previous experience and present interest of the children.

Simple experiments for discovering the gluten, starch, water, and ash in the cereals will be performed by the children when their questions demand such analysis as explanation for their results. All observations will be carefully recorded to be used as data and guides in future experiments. Some of the observations recorded will probably be:

A record of time taken to parch and pop corn under different conditions.

Results of a comparison of parched wheat, corn, and rice.

Results of cooking each grain in cold water. Results of boiling each a given length of time.

Notes on the making of cereal coffees.

A record of physical changes produced by each process of cooking.

The effect of baking, boiling, and roasting upon the taste of each grain.

The esthetic side of the work will be emphasized in the preparation and serving of the food to invited guests.

Language, reading, writing, and number lessons are obviously incidental, but most essential to accurate execution in this work. See Reading Lessons in December number of COURSE OF SUTDY.

In number the problems will consist in measuring quantities and estimating the cost of materials; in determining the exact amount of water each cereal absorbs under various conditions; in measuring the temperature and time required in different experiments; in the planning and making of the recipe book; and in the keeping of marketing accounts for the month.

For detailed plans for making of aprons, dish-towels, and cook books, see Department of Industrial Arts for December.

Art

John Duncan

HIGH SCHOOL AND PEDAGOGIC SCHOOL. The work for this month will be a continuation of that indicated for October. (See October Outline.)

Much that is suggested in the outline may give place to other work more pressing, such as the decoration of the building we are to occupy during this winter, and any temporary decorations called for by special occasions. This month we celebrate Thanksgiving and will begin to plan the decorations for Christmas. The students will form themselves into little voluntary groups for the doing of special things, and work into each other's hands, the less skilled assisting the more skilled in their work, somewhat on the lines of the apprentice system of the Renaissance, each to help in the degree of his or her ability, from the greatest to the least.

All the energies of the Art Department will be directed to the doing of work needed by the community. The work may be classified as below:

1. As indicated, the decoration of this and other schools with illustrative pictures, statuettes, and panels modeled in relief and colored. There is a great want of effective and appropriate pictures for the use of schools, and it is thought that as the teachers and pupils know their own most intimate needs, such pictures might best originate with themselves.

Suggested subjects — for use in the kindergarten and first grades. *a.* The rooms of a house; kitchen, dining-room, drawing-room, library, nursery, bedroom, bathroom. *b.* Animals: Cats, kittens, dogs, hens, chickens, etc. (the more familiar animals), and perhaps a few of the most impressive of the strange ones. *c.* Illustration of fairy tales.

The story of Ulysses told in five pictures for the use of the Fourth Grade: these to be done in silhouette much in the manner of the Greek vase paintings.

2. Increasing the collection of materials in the school.

3. Making of pictures, models, and art objects of every kind to be handed over to the students of the Pedagogic School on their leaving us, as a nucleus for their own future collections. This, which has already been done in an intermittent way, is to be regulated and become part of the ordinary business of the school.

4. Making of presents for parents and others.

NOTE.—The students will carry sketch-books with them through the various departments of school, to the museum, in the park, and streets: (1) to make memoranda of subjects for their art as they are suggested in the different classes; (2) to seize their inspirations as they come, and (3) to capture the life in motion about them.

Speech, Oral Reading, and Dramatic Art

Martha Fleming

The work begun in October will be continued along the lines indicated, and every effort made to increase the power of clear, easy, forceful speech, and to make the children feel at home while speaking to their class or to the whole school.

In the primary grades it is suggested that if the children tell again the stories told to them last month it will help to bring about this result. Children love to hear the same story over and over again, and they will listen attentively and sympathetically to each other.

The responsibility thus thrown upon them will give practice in the use of language and add to their vocabulary, for they unconsciously use the words which were used by the author or teacher. Work of any kind done by an individual or by a group may be explained or reported in the same way. We have now the natural conditions for free expression: the school has resolved itself into speaker and audience, an ideal arrangement for cultivating power in speech. The effort of the speaker to interest and hold his audience will develop skill in the use of his voice and body and tend to increase his personal power. When a story admits of dramatization, and the interest demands this mode of expression as the one which, through the personality of the actors, will make most real, most alive, the loved heroes of story, history, myth, and romance, opportunity will be given for the full realizations of these ideals.

A dramatization should come at the end of the month as a summing up of all the experiences on a given subject. Dramatic art appeals to the eye and to the ear. It is a succession of related pictures which unifies all that may have been expressed in part by other modes of expression.

The children's natural love for rhythm, and for beauty and harmony of sound, calls emphatically for the poetic form of literature. Mere prose facts deaden and depress both body and spirit; the dance, music, art, and poetry bring into the highest action body, brain, and heart, and stimulate the whole being; therefore they should be put into the real life of the children, and made a living part of every day's work. For this reason a beautiful poem, related either to the subjects of study or to some other interest in the life of the children, has been selected for this month. Others will be added as the work and interest of the children may suggest.

Thanksgiving and the preparation for it will occupy much of the children's thought in November. The harvest feast is an old institution, and its origin and the manner of its celebration at different periods and among different peoples is a fruitful subject of study and an appropriate one for dramatic treatment. On Thanksgiving Day the result of this study will be presented by groups in historic costume, accompanied by music and poetry.

The whole school, academic and pedagogic, will take part in the Thanksgiving celebration.

In connection with the French Department and the Cooking Department, a little Thanksgiving dinner, which will combine French Dramatic Art and cooking, will be given. A French menu will be served. The waiters will speak only French. The company will be entertained by French songs, stories, and fables. A little play also will be given, for the purpose of cultivating courtesy and graciousness of manner.

The work in this department will reinforce the work done in Physical Training by constantly demanding deep, full breathing in voice production, and correct positions in sitting, whether studying, writing, drawing, or painting, also by insisting that each student shall carry the body erect and well poised when standing or moving about. Physical training loses its function if the energy used in exercise does not result in correct habits in these fundamental actions. Constantly repeated action soon sinks into the automatic, and trivial causes will often induce serious and destructive habits.

The highest form of physical culture is the natural response of the body to thought. By muscular action it is constantly revealing predominating thoughts and emotions. Every bearing, attitude, and inflection, every bit of muscular relaxation and contraction, is the expression of some thought or condition of the being. The habit of inhibiting this expression, to which much school life tends, only turns the roused energy into another channel, and the body truthfully records this inhibition.

The work in the Pedagogic class will much of it be directed towards breaking this habit. If fear of ourselves or of others is in possession of our souls it is also in possession of our bodies, and controls every muscular action and every tone of the voice. Often new environment acts to produce fear, or it may come from lack of practice in self-expression. We shall, therefore, begin at once to read aloud to the class, to tell stories related to subjects of study, and to commit to memory and recite some of the literature used in the grades.

The only way to overcome self-consciousness is to think so clearly and feel so deeply that there is no room for fear or other thought of self, and expression becomes a necessity and a delight.

For the special work in each grade, see the grade outlines.

Suggestions to Teachers

The outlines for the different grades this month allow for much supplementary reading.

Reading for study should as a rule be done silently. There is danger of calling for too much oral reading.

Reading is thinking by means of the written or printed page. Oral reading is the expression of thought and emotion.

In so-called sight-reading for children the words should be those readily recognized and functioned. The sentences should be short and the thought and emotion within such easy grasp that the reader can give his energies to expression.

Do not put a book into the hands of children and ask them to read orally at sight a bit of history, a scientific observation, or a story that you could not read without study.

Two motives govern the desire to read aloud; first, the desire to share with others what one possesses; second, the necessity for expression as an outlet for aroused energy.

Do not call for oral reading until the children have something to tell. Ideal conditions for oral reading are one book, a reader, an audience, and interesting material.

Do not lose the children's point of view in reading. They read because of their interest in the story, and are impatient of interruptions. "I don't see," said one little girl, "what our teacher meant. We were so interested in that story we could hardly keep our seats, and she kept stopping us and asking us questions, and making us do it over and over again until we just *couldn't* stand it. I don't want to go to that school any more."

Do not allow a child who is reading orally to struggle with the pronunciation of a word. Help him incidentally; keep him unconscious of his difficulty. The book means to many children only a struggle with words, and oral reading word-calling. They image only words, and there is no room for the thoughts and emotions of which words are the signs.

Do not drill upon words or phonics in close connection with oral reading, lest the child's mind be distracted from the thought. The whole energy of both teacher and class should be directed towards one end—the securing of vivid images and adequate expression.

Do not call upon one child to criticise another's reading, or ask him what is wrong with it, or how he would read it; the interest should be so intense that the impulse of every child is to express his own images, not to criticise others. Call for reading from the different children. The class will unconsciously note differences and select the most truthful interpretation of the text.

Cultivate a habit of independent study of the text.

Do not ask the children how they would read this line or that stanza; let them read and judge from their expression what images they have. If they are not appropriate and full, stimulate to better imaging by questions, by pictures, by stories, and then call for expression when the emotion is at its height.

Do not analyze a selection until the life is all taken out of it. Allow only such discussions and analysis as will make the images vivid. View the selection as a whole. Strike for the great central thought; this includes the lesser.

Do not speak to the children of emphasis, pause, or inflection. Technique comes through doing.

Have the courage to accept genuine expression, no matter how crude it is.

The record of work is the child himself. How does he think? How does he carry himself? How does he use his body in expression? How does he use his voice? How does he speak? How does this mode of expression react upon him?

The Motherless Turkeys

The white turkey was dead! The white turkey was dead!
How the news through the barnyard went flying!
Of a mother bereft, four little turkeys were left,
And their case for assistance was crying.

E'en the peacock respectfully folded his tail,
As a suitable symbol of sorrow,
And his plainer wife said, "Now the old bird is dead,
Who will tend her poor chicks on the morrow?
And when evening around them comes dreary and chill,
Who above them will watchfully hover?"
"Two each night I will tuck 'neath my wings," said the duck,
"Though eight of my own I must cover!"
"I have so much to do! For the bugs and the worms in the garden, 'tis tiresome pickin';
I have nothing to spare—for my own I must care," said the hen with one chicken.

"How I wish," said the goose, "I could be of some use,
For my heart is with love over-brimming;
The next morning that's fine, they shall go out with my nine
Little yellow-backed goslings, out swimming!"
"I will do what I can," the old dorking put in,
"Though I have ten of my own that are only half grown,
And a great deal of trouble to see to,
But those poor little things, they are all heads and wings,
And their bones through their feathers are stickin'!"
"Very hard it may be, but don't come to me!"
Said the hen with one chicken.

"Half my care, I suppose, nobody knows—
I'm the most overburdened of mothers!
They must learn, little elves, to scratch for themselves,
And not seek to depend upon others."
She went by with a cluck, and the goose and the duck
Exclaimed in surprise, "Well, I never!"

—MARIAN DOUGLASS.

Music

Helen Goodrich Bertha Payne

In the teaching of songs in the first four grades arithmetic is needed to help clear up ideas of time. Addition and fractions will be useful in developing this point. The use of reading in these grades is obvious. The stimulation of an attractive song sung to little children makes the reading of the text a relatively easy task. In all grades there is constant necessity for clear and correct enunciation and articulation, for the purpose of making more vivid one's own ideas, as well as for communicating them to others; right pronunciation is always insisted upon; and an intelligent rendering of the text (oral reading) reacts most favorably upon the declamation in singing.

During October the children in all grades think a great deal about the plant life which has been developing through the summer and has come to fruition, supplying us with many of our most-needed foods; and the harvest songs are followed naturally in November by those of Thanksgiving. Songs of frost, wind, and perhaps snow will find their appropriate places in all the grades.

The reason for the comparatively large number of songs given for each grade — the singing teacher is with the children only twice a week — lies in the importance of variety. The value of a large musical experience cannot be overestimated; it is the condition of growth. There is little reason to expect the development of a subtler sense of rhythm than is inculcated by a Sousa march, or finer melodic discrimination than the popular "coon-song" demands, unless the musical feeling and understanding are continually being broadened by experience in singing intelligently many beautiful songs. It will often be wise to use only one or two verses of a song, or to drop it as soon as it has been sung a few times with vivid expression and proceed with others.

Besides the Thanksgiving, Wind, and Frost songs, a number of songs is given for the First, Second, and Third Grades, from which will be selected those which prove to be the most useful as the month's work develops. Most of the songs selected for these grades are composed of the simplest possible intervals, arranged in very simple rhythm, which still have varied and musical content. Some of them will be found very useful in the matter of close observation of musical elements, supplying material for necessary drill.

Songs

First, Second, and Third Grades: *We Plough the Fields*, p. 24, Eleanor Smith's Songs for Little Children; *Jacky Frost*, p. 80; *The Squirrel*, p. 30; *When the Little Children Sleep*, p. 96; *The Elephant*, p. 52; *The Snow Birds*, p. 35; *The Trees*, p. 10; *Earth's Dresses*, p. 54; *Jumping Johnnie*, p. 46; *Bells That Hang*, etc., p. 34, Primer, Modern Music Series.

The Fourth and Fifth Grades will sing the Thanksgiving songs and hymns together. The Fourth Grade, being interested in Chicago, its labor and laborers of all nationalities, will learn more folk and national songs, and some trade-songs. The blacksmith song gains added interest from its connection with the Siegfried story. The Fifth Grade will learn a spinning song in connection with their reading of Miles Standish. *The Months* will be used partly to develop some work in sight-reading and dictation.

Fourth Grade: *Harvest* (hymn), Songs of Life and Nature, p. 186; *We Plough the Fields*, Eleanor Smith's Songs for Little Children, No. 2, p. 24; *Wind Song*, Modern Music Series, First Book, p. 94; *The Months*, Modern Music Series, Primer, p. 62; *A Snowy Day*, Modern Music Series, Third Book, p. 174; *Sing a Song of Workshops*, p. 20; *The Blacksmith*, p. 90, Modern Music Series, Primer.

Fifth Grade: First five songs given for the Fourth Grade; *Duke Street* (hymn); *Spinning Song*, Modern Music Series, Third Book, p. 114.

The songs for the Sixth, Seventh, and Eighth Grades will be analyzed as to rhythm and intervals of some of their prominent phrases, and some dictations will be given out of the Primer. The soprano of the new hymns for morning exercises will be learned.

Sixth, Seventh, and Eighth Grades: *Harvest* (hymn), Songs of Life and Nature, p. 186; *Snowy Day*, Modern Music Series, Third Book, p. 174; *Nutting Song*, Modern Music Series, Second Book, p. 162; *He Prayeth Best* (two parts), p. 32; *We Merry Minstrels* (three-part Round), p. 15, Modern Music Series, Third Book.

The High School pupils are chiefly interested in helping with the songs and hymns for morning exercises and Thanksgiving songs. Preparation for part-work will be carried further by the study of *Songs* on p. 126, Third Book, Modern Music Series. The boys will be drilled on the bass parts of *America* and the hymns, and the girls will begin special work on the *Christmas Carol*, by Reinecke, Songs of Life and Nature, p. 40. (Also given in July number COURSE OF STUDY.)

Lead, Kindly Light and *Balder, the Beautiful* (Songs of Life and Nature), will be studied carefully by the High and Pedagogic Schools, and will be learned by the grammar grades as fast as practicable for use in morning exercises.

Marches for Gymnasium: *Military March*, Schubert;. *Military March*, from *Figaro*, Mozart; *Swedish Wedding March*, Söderman.

For grade-rooms and kindergarten, *Five Marches for Kindergarten*, Eleanor Smith, are recommended.

Singing in the Pedagogic School

Bertha Payne

Since the first essential in teaching singing to children is the presentation of a good model in the teacher, we shall work this month mainly to secure a better control of the voice, rather than to reach any conclusions concerning the pedagogy of the subject.

The voices have been tested, and special exercises have been recommended for individual pupils. This work will be continued as far as possible with frequent personal supervision and suggestions. The use of vocal exercises in a large class is helpful in the main, but may be harmful to those who nullify the intended good effect by wrong singing of a good exercise. Experience shows that a large majority of students and teachers have in common certain hindrances to the production of beautiful tone; to overcome these habits we will give our attention first to forming and keeping in imagination the ideal tone, pure, sweet, and full; second, to persistent practice of a few exercises.

The most common obstructions are tight throat muscles, stiff tongue-root, stiff jaw, and wrong direction of breath. Where these conditions exist a good tone is impossible and enunciation is necessarily thick.

EXERCISES FOR BREATHING: Deep inhalation in puffs. Long, slow exhalation. Quick, deep inhalation. Exhalation in puffs; emitting as little air as possible at each puff. Quick inhalation, with firm diaphragm, and emission in audible recitation or counting.

FOR DIRECTION OF BREATH: Breath sent to the lips by continued use of lip-consonants, with the vowels "o" and "e" as, vo-vo-vo-we-we-we.

For jaw and tongue: Simple withdrawal of energy, making organs limp. Singing vowels very lightly under these new conditions.

The difficulty of the problem lies first in the relinquishing of habit; and second, in the selection of new paths of innervation, where the eye cannot guide at all, and the ear but partially.

When this "voyage of discovery" has by accident, as it were, found the true path, the next step to success is to secure the judgment of another as to the purity of the tone, and then to fix the feeling that results from the new use. This process firmly adhered to, with a true conception of the ideal tone, will work a change for the better in every voice.

The songs will be, first, hymns and songs of general interest. Later, children's songs will be studied.

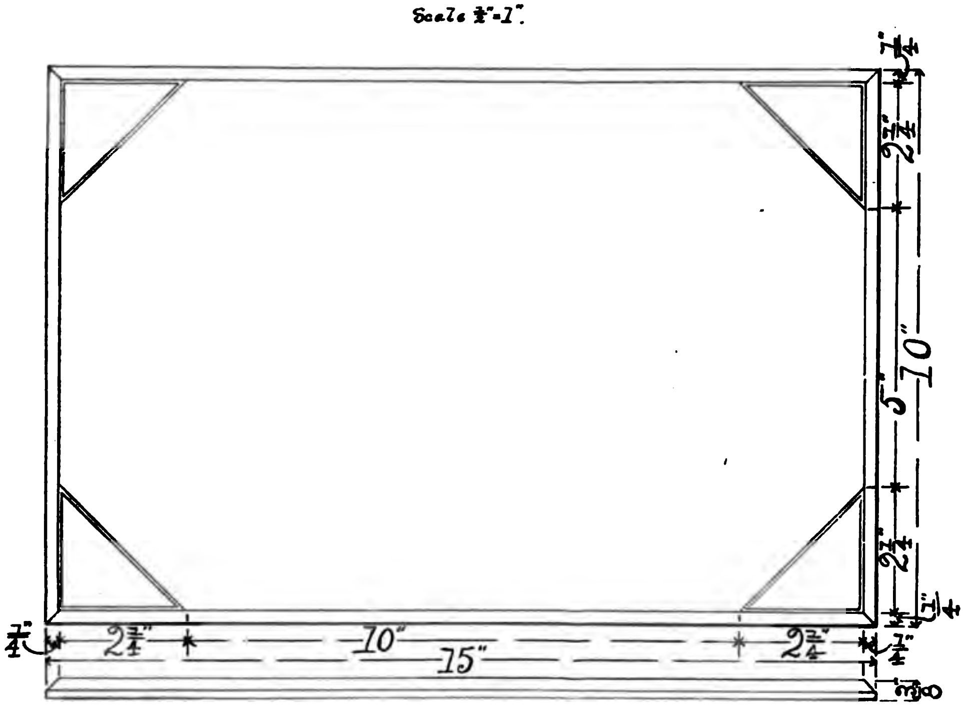
Manual Training

Ira M. Carley Cora Champlin

During the months of November and December the handwork of the school will be principally the making of articles for use in the home, especially things for Christmas gifts.

This work is particularly valuable in the opportunity it affords for the cultivation of the relation between the school work and the home interests, and for awakening the children's interest in the furnishing and decorating of their own homes. The choice of what shall be done will rest as much as possible with the individual pupil rather than with the teacher.

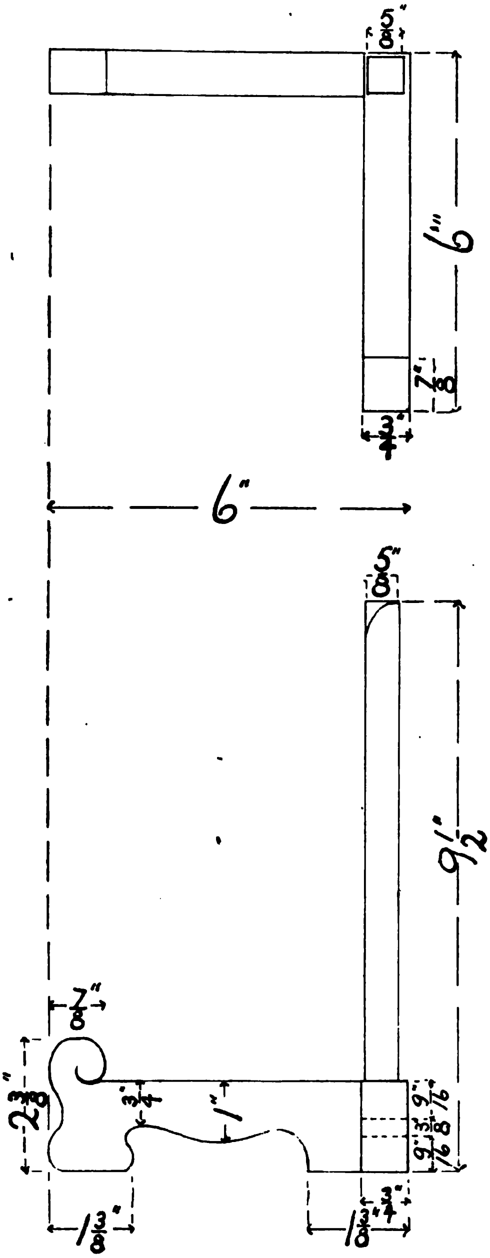
It is believed that whatever may be lost in this manner of procedure, in sequence of exercise, is much more than compensated for by the increased spontaneity



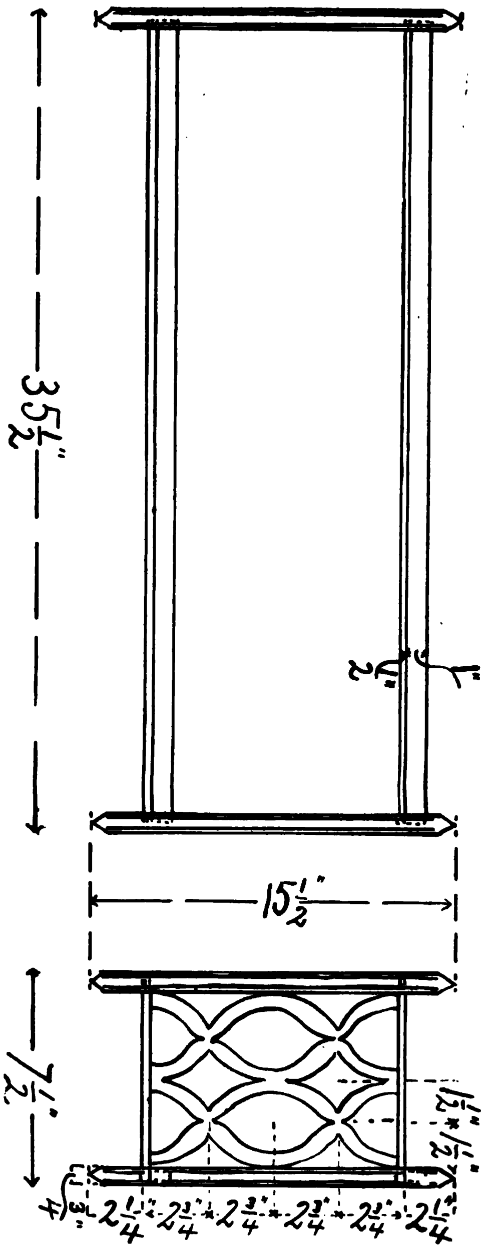
No. 1. BLOTTER PAD.

of interest, the development of the power of individual initiative, and by the fact that the pupil is working under the stimulus of the very best of motives — that of attaining an end which he himself feels to be good and worthy his best effort.

The statement that the choice of work rests with the pupil does not mean that he shall be at liberty to attempt any idea that may appeal to him, as his inexperience usually leads him to underestimate

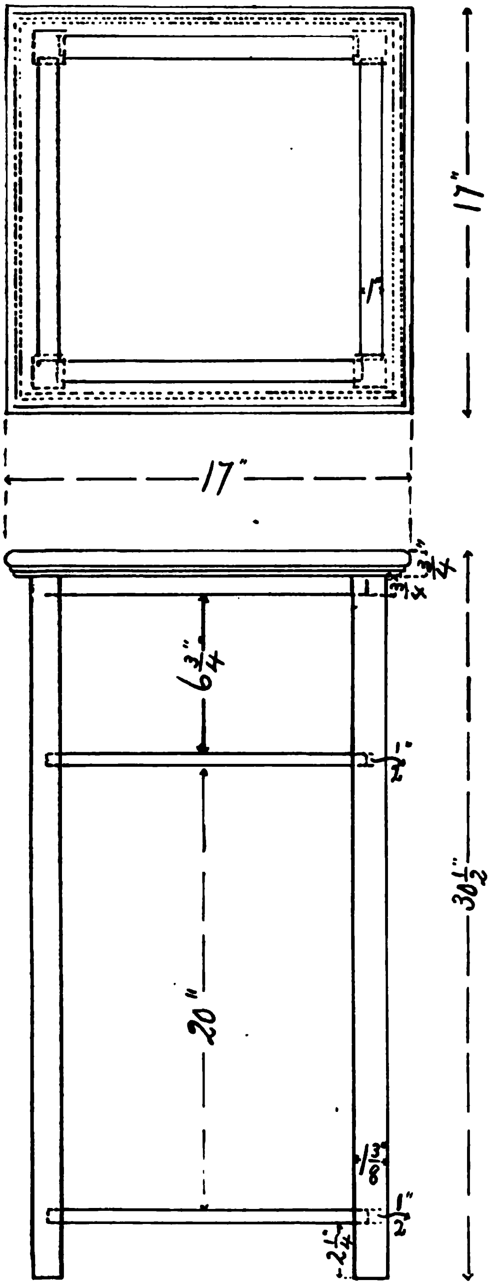


No. 2. EASEL.

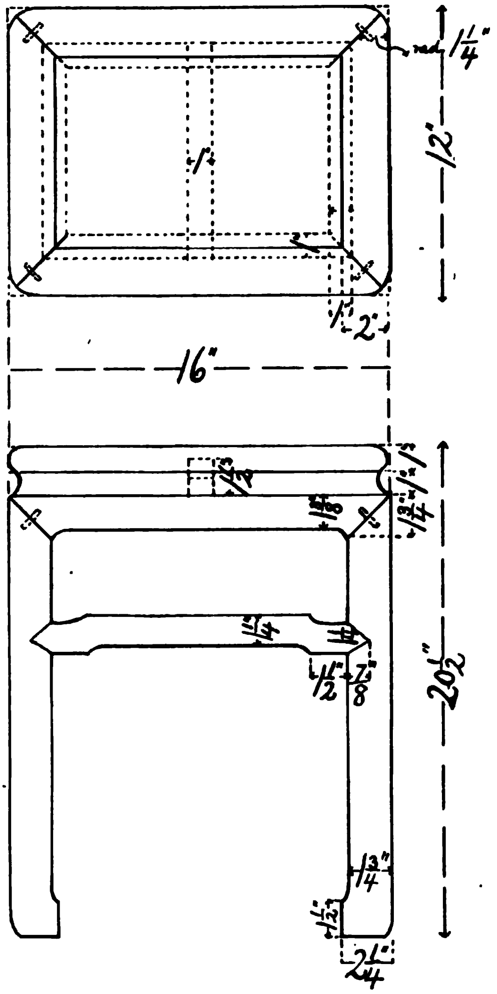


No. 3. PLATE RACK.—FLEMISH OAK OR VERMILION WOOD.

the difficulties to be overcome; and as a result of beginning work beyond his power he becomes discouraged by continued failure. It means that any idea of the child's own will be treated as of the greatest value, and if it is at all practicable he will be encouraged to work it out, and help will be given, when needed, in perfecting it in design and construction, and in adapting it to his skill and experience. Before the children are asked to make a selection of the work they are to do in any branch of handwork, they will be given opportunity of becoming familiar with a number of good examples of work of the given kind adapted in construction to their ability.



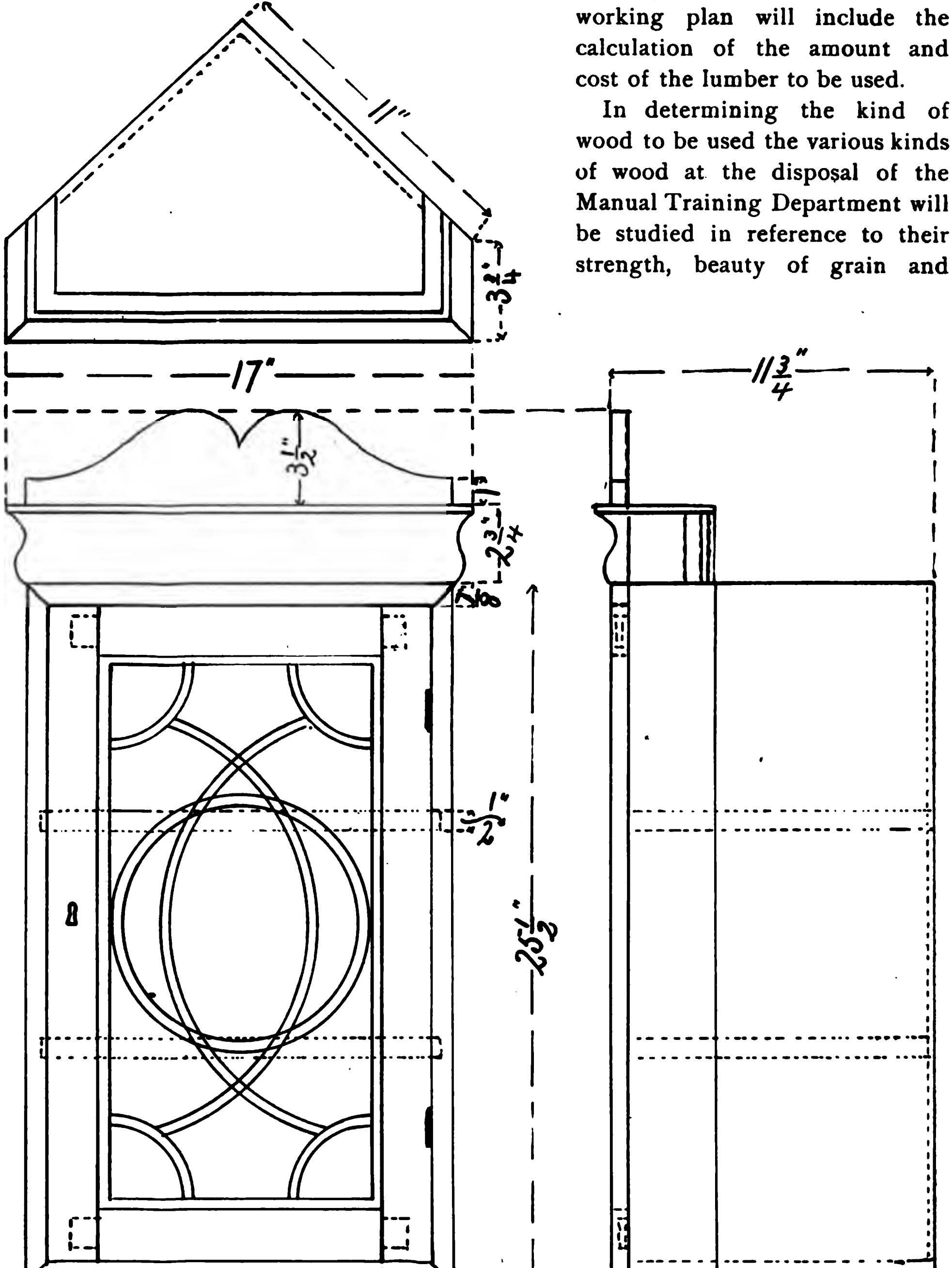
No. 4. TABLE.



No. 5. JARDINIERE STAND.
(Chinese.)

When the pupil has decided upon what he will make he will be asked to make a free-hand sketch of the object, and in the woodworking department a working drawing made to a scale. The working plan will include the calculation of the amount and cost of the lumber to be used.

In determining the kind of wood to be used the various kinds of wood at the disposal of the Manual Training Department will be studied in reference to their strength, beauty of grain and



No. 6. CORNER CABINET.

color, hardness, and degree of difficulty in working.

The accompanying drawings are intended as suggestions for pieces of woodwork for the upper grades and the high school, except No. 1, which is intended for the Second Grade.

Plans for some of the designs finally adopted will appear in the December number of the COURSE OF STUDY.

Physical Training

Karl J. Kroh

General Gymnastics: The cultivation by by the pupils of an erect carriage and good bearing must be insisted upon on all occasions, at all times. Pupils will be required to rise promptly and to stand properly, correctly observing the fundamental standing position, with head erect and chest active. A frank and open look should be characteristic of their address. Pupils persisting in faulty attitudes during recitations will be referred to the teachers' assistants for special gymnastics.

Particular attention will be given in all seasons of the year to the dress adaptation of the pupils to physical exercise, and no clothing, wraps, tight bandages, or inelastic belts, in any way restricting freedom of action and a natural development, should be worn. Rubber shoes or boots should not be worn during school hours.

The physical training must always be conducted in pure air, and short, vigorous exercises given whenever needed. Plenty of light is also advisable. Study the ventilation of the rooms and test the air by outdoor breathing. The temperature should be about 68°.

If practicable, exercise in the open air, outdoors. Avoid unnecessary exposure to draughts. The work should be essentially contributive to the health and spiritual freshness of the children and students, and must be directed as a means of developing personal vigor. Outdoor exercise, therefore, is preferable to room-drills.

Caroline Crawford

In the same way that the children are led to gymnasium practice they must also be introduced to gymnastic play. Experience teaches that even the games of children must be first learned, and that these need preparation and practice, extension and limitation, as does every other pursuit. There are pupils whose disposition is opposed to the normal activities of childhood, in whom an indoor life has destroyed the inclination to play. In others the zeal for play must be tempered. Children needing special attention in physical training are brought to the offices of this department by the teacher's assistants, who will receive instructions for the work of such pupils. Such work is to be directed by the assistant teachers at a time specially designated by the regular teacher, or as advised. Reports concerning state of health, progress, regularity of school and designated home work are to be regularly made every week.

On presentation of children for special work, the regular teacher's detailed statement in each case is desired.

Gymnasium work consists of (a) mass, (b) class, (c) group, and (d) individual practice; and embraces tactics or order exercises; free standing movements and exercises; exercises with hand apparatus; dancing calisthenics, for girls; running exercises; apparatus gymnastics; jumping and vaulting exercises; games and plays. Time devoted to the different forms of exercises will vary according to selection and values of the respective exercises, choice and content of selection being determined by the degree of skill and proficiency attained by individual classes undergoing physical training.

Mass work employs all pupils of one or more grades in a like order of work; class work employs the pupils of one grade only in work specially designated or adapted; group work is represented in smaller divisions of grades showing marked differences in skill or ability; individual work ordinarily consists of successive execution by pupils of exercises (in groups); also, of repetitions of forms of exercises of a lesson, in which pupils are deficient—under special direction. The different forms enumerated can be utilized for either mass, class, or group work. Their order or place, in a lesson, therefore, may vary; for instance, running as well as tactics may precede, interrupt, or follow free standing exercises; tactics may become an accompanying feature of apparatus work; springing exercises may follow or be practiced as a part of apparatus work; fancy steps may be substituted for free exercises with girls; indeed, a selection — with reference to form — may depend on most or all the characteristic forms of work for its complete representation. This difference in lesson-programs, however, is had only in grades in which pupils have become familiar with an abundance of material, as in the upper grades.

To facilitate progress in gymnastics emphasis is placed upon the fundamental procedures represented in the various adaptations of free standing movements and exercises throughout the first term. The order of exercises in this practice is as follows:

TACTICS: Positions; preparatory practice of movements occurring in formations and alignments, as stepping, marching, halting, and turning exercises. Emphasis of good posture, bearing, and carriage, fundamental to the execution of all gymnastic practice.

ACTIVE CHEST WORK: Backward and sideward flexions of the head; backward trunk flexions; respiratory exercises with accompanying arm movements. Accentuation of proper lines of chest and back development; poise.

ARM AND LEG EXERCISES: Extensions and elevations, etc.; striding and lunging exercises; heel-elevations and knee-bending exercises combined in alternate and simultaneous execution. Development of co-ordinative power.

TRUNK EXERCISES: Forms of flexions, backward, forward, and sideways; rotations; rotations and flexions combined. Reinforce design of preceding work, strengthening the muscles of the abdominal walls.

ARM AND LEG EXERCISES: As above, or combined with tactic exercises. Moderate effects of preceding exercises.

The above order of exercises is chosen for all practice periods directed by teachers or students. Omissions lessen the value of the practice.

In outdoor or hall practice moderate running exercises may find a place under arm and leg exercises, preceding trunk exercises; springing exercises may follow trunk exercises. Respiratory exercises are introduced whenever needed.

Games and plays are practiced only during specially designated play hours, and must not be substituted for practice in free standing movements.

Pedagogic Class; Study of the preliminary plan of work-adaptation suggested in the October issue. Purpose: To meet the physical requirements of the pupils for healthy development, through selection of appropriate material; to enhance study-power, and skill through progressively co-ordinated action. Physical development and health of pupils as judged by actions and attitudes. Estimates of condition, of strength, control, and skill obtained in the practice of ordinary movement forms, such as walking, running, hopping, jumping, etc., and during observation of games and plays. Indications of strength, mobility, flexibility. Degrees of volition, attention; accuracy in execution; gymnastic development; modes of progress.

Physical measurements and tests; comparison of heights, weights, breadths, girths, etc., with the standard for a given age. Physical characteristics revealed in comparative studies; length of parts of limbs in relation to body; of over and under developed parts; inherited and acquired tendencies. Defects of faulty muscular habit, in attitude or movement; sense defects.

Periods of growth and development during school life; characteristics of childhood and adolescent periods. Influences of school life; development of tendencies indicated in school habits. Importance of foreseeing and counteracting tendencies toward faulty action and posture.

The discussion of the technical work of the past month will include a consideration of the order of exercises, modes of execution, mechanical details, gymnastic development, and general effects.

Individual Gymnastics: The physical measurements reveal only the data in regard to size, strength, symmetry, and proportion. In addition we must know defects of parts, and the examiner's report is our guide.

Examiner's Report

No------ ----------
Date ------- ------
Ht------ -----------
Cir------------------
St------------------
Blood---------------
L-------------------
M.—h. s. f. c.
S.—c. m. p. b. r.
P.—b. f. s. p. p.
He.—f. b. r. l.
Sh.—f. d. r. l.
Ch.—d. f. r. l. c. p. h.
S.—d. p. t. b.
Ri.—d. p. r. l. c.
St.—d. p. c.
Ab.—d. p. f.
W.—b. d. f. n.
Lu.—h. f.
Ba.—r. h.
Sp.—p. c. r. l. a. r. c. d. l.
Sc.—p. f. r. l. d.
Ar.—b. t.
Ar.—e. f. p. s.
Hi.—b. n. f. h. r. l.
Th.—e. f.
K.—w. b. k.
Lg.—e. f.
Ru.—r. l.
Fa. Le. Me.

Key to Examiner's Report

Heart---------------
Circulation----------
Standing-------------
Blood---------------
Lungs---- ----------
Muscles—hard, soft, flabby, coarse.
Skin—coarse, muddy, pimply, brown, rough.
Head—forward, back, right, left.
Shoulders—forward, down, right, left.
Chest—depressed, flat, prominent, right, left, center, hollow.
Sternum — depressed, prominent, twisted, bent.
Ribs — depressed, prominent, right, left, center.
Stomach—depressed, prominent, curved.
Abdomen—depressed, prominent, fat.
Waist—broad, deep, flat, narrow.
Lumbar—hollow, full.
Back—round, hollow.
Spine—prominent, curved, right, left, anterior, rotation, cervical, dorsal, lumbar.
Scapulæ—prominent, flat, depressed, right, left.
Arms—biceps, triceps.
Arms—extensors, flexors, pronators, supinators.
Hips—broad, narrow, full, high, right, left.
Thigh—extensors, flexors.
Legs—extensors, flexors.
Knee—weak, bowed, knocked.
Rupture—right, left.
Fat, lean, medium.

From the measurements and examinations, the special prescriptions are made for individual practice and control. The form of prescription, as also the special indications from each part measured, will appear in the December outline.

Olympus in Smith's Dictionary of Geography, and *Pergamene Sculptures* in Seyffert's Dictionary, and look up all of the subjects in Harper's Classical Dictionary and the Encyclopedias.

IX.

Οὐδεὶς δι' ἐμὲ τῶν ὄντων Ἀθηναίων μέλαν ἱμάτιον περιεβάλετο. Περικλῆς.

Περικλῆς ἦν ῥήτωρ τε καὶ ἡγεμὼν τῶν Ἀθηναίων, καί δι' αὐτὸν εἰργάσαντο τὸν Παρθενῶνα καὶ τοὺς ἄλλους καλοὺς ναούς. ὁ τρόπος αὐτοῦ ἦν σεμνός τε καὶ εὐσεβὴς καὶ ἀεὶ εὔχετο τοῖς θεοῖς πρὸς τὸ βῆμα ἰών. ἡ δ' αὐτοῦ πραότης ἦν πολλή· λοιδορούμενος γάρ ποτε ὑπὸ κακοῦ ἀνθρώπου ἐν ἀγορᾷ ὅλην ἡμέραν κατεπράττετο τὰ πολιτικὰ πράγματα σιωπῶν. ἑσπέρας δ' ἀπῄει οἴκαδε παρακολουθοῦντος τοῦ ἀνθρώπου καὶ ἔτι λοιδοροῦντος· ὅτε δ' εἰσῄει ἐκέλευσε τὸν δοῦλον φῶς λαβόντα παραπέμπειν τὸν ἄνθρωπον εἰς τὴν οἰκίαν.

Look up *Pericles* in Smith's Dictionary of Biography, and *Parthenon* in Smith's Dictionary of Antiquities; and both of the subjects in Harper's Classical Dictionary and the Encyclopedias. Read also Grant's *Greece in the Age of Pericles*, ch. 7 and 8, and Plutarch's *Life of Pericles*.

X.

Εἰσὶν μητρὶ παῖδες ἀγκύραι βίου.
Σοφοκλῆς.

Σωκράτης πότε αἰσθόμενος τὸν υἱὸν πρὸς τὴν μητέρα χαλεπαίνοντα, Τίνες ἄνθρωποι, ἔφη, ὦ παῖ, ἀχάριστοι καλοῦνται;

Οἱ δ' εὐεργετησάμενοι, ἔφη ὁ παῖς, ἐάν δυνάμενοι χάριν ἀποδοῦναι μὴ ἀποδῶσιν, ἀχάριστοι καλοῦνται.

Οὐκοῦν, ἔφη ὁ Σωκράτης, δοκοῦσί σοι οἱ ἀχάριστοι εἶναι ἐν τοῖς ἀδίκοις;

Καὶ μάλα, ἔφη ὁ παῖς.

Ἆρα δὲ, ἔφη ὁ πατὴρ, οὐκ εὐεργετοῦνται παῖδες ὑπὸ γονέων; ἢ οὐκ οἶσθ' ὅτι τὸ παίδιον ὑπὸ τῆς μητρὸς πολὺν χρόνον καὶ ἡμέρας καὶ νυκτὸς εὐεργετεῖται;

Ἀλλ' εἰ ἡ μήτηρ, ἔφη ὁ παῖς, καὶ πάντα ταῦτα πεποίηκεν, οὐδεὶς δύναται αὐτὴν οὕτως λέγοντα χαλεπῶς ἀκούων μὴ χαλεπαίνειν.

Πῶς δὲ, ἔφη ὁ Σωκράτης, οἱ ὑποκριταὶ δύνανται τοὺς ἀλλήλων χαλεποὺς λόγους ἀκούοντες μὴ χαλεπαίνειν;

Ἀλλ' οὗτοι, ἔφη ὁ παῖς, τοὺς χαλεπῶς λέγοντας οὐδὲν κακὸν ποιεῖν βουλομένους εἰδότες, ῥᾳδίως φέρουσιν.

Οὐκοῦν, ἔφη ὁ Σωκράτης, οἶσθ' ὅτι ἡ μήτηρ σοι, εἰ χαλεπῶς λέγει, οὐδὲν μὲν κακὸν ποιεῖν βούλεται, πολλὰ δ' ἀγαθὰ τοῖς θεοῖς εὔχεται; σὺ δὲ, εἰ τοιαυτην μὴ δύνασαι φέρειν μητέρα, τἀγαθὰ οὐ δύνασαι φέρειν. τοῖς δὲ θεοῖς, ὦ παῖ, εὔξῃ συγγνωμὴν, εἰ ἐχαλέπηνας τρὸς τὴν μητέρα.

Look up *Socrates* and *Xanthippe* in the Dictionaries and Encyclopedias, and read Grote's *History of Greece*, ch. 67.

French

Lorley Ada Ashléman

During the month of October the children have evolved some recipes in the cooking classes, and have collected data in their other studies, which must be recorded. In November they will therefore begin to write single records in French. The records of all the classes bound together will make a French journal for the use of the school.

The cooking and serving will be continued and the dramatizing of stories. Children will design and make costumes for little plays.

Group I: The pupils of this group will study the serving of food, arrangement of table, and the greeting of guests for Group II, who are cooking. They will compare American customs with French customs. An excursion will be arranged to Burley's for the study of French pottery, and an attempt will be made to manufacture and decorate little dishes.

Children will record in French as much as possible of the information gained through the above work for the benefit of the other classes.

Group II: The children of Group II will keep the recipes which they have tried, thus making a cook-book for the use of other grades.

Group II will invite Group I to help in making French book-covers for the monthly journal. These covers will be Christmas gifts.

Group III: The construction of French calendars will continue. The dramatization of the story of the first potatoes eaten in France will call for the study of the manners, dress, and condition of the French people at this period. The Christmas work will be begun in the form of French bonbon bags.

Group IV will attempt two French games of cards—one based upon flowers, the other upon fruits. November scenes will be produced for Group III, who are making calendars.

The little play of La Salle will be begun. A letter of thanks will be written to the High School, thanking them for interesting reading matter on Kankakee.

French Reading Lessons

Bonjour

M. Casimir Bonjour, candidat à l'Académe, se présente un jour pour faire sa visite chez un des quarante. Une femme de chambre vient lui ouvrir la porte. "Votre nom, monsieur?" dit-elle. Le candidat répond avec son plus gracieux sourire: "Bonjour." Flattée de cette politesse, la jeune fille répond: "Bonjour, monsieur, voulez-vous me dire votre nom?" "Je vous dis, Bonjour." "Et moi aussi, bonjour, monsieur; qui faut-il que j'annonce?" "Eh, Bonjour! c'est mon nom." La caméristе comprit alors, qu'au lieu de dire: Bonjour, monsieur, il fallait dire: Monsieur Bonjour.

Antoine Augustin Parmentier

Aujourd'hui une pomme de terre semble peu de chose. Pourtant un écrivain anglais a dit: " La pomme de terre a joué un plus grand rôle dans l'histoire du monde que Malborough et Napoléon même.

Elle a sauvé la France et l'Irlande de la famine, elle a répandu la culture sur les pentes des montagnes rocheuses.

La pomme de terre transportée du Péru en Europe dès le 15e siècle, n'avait été multipliée avec succès que dans les provinces méridionales de la France. Une prévention aveugle arrêtait ailleurs les effets heureux de cet exemple. De vieux patriciens répandirent, non plus que la pomme de terre était susceptible d'engendrer la lèpre, comme on l'avait dit dans le 16e siècle, mais bien qu'elle pourait devenir une cause de fiévres nombreuses.

C'est Parmentier, le grand chimiste et agranome français qui a donné au peuple français le don précieux de la pomme de terre.

Il démontra que l'homme pouvait trouver un aliment délicat dans la fécule de cette racine que l'ignorance abandonnait exclusivement aux animaux.

Pendant la guerre de Sept Ans Parmentier, qui se trouva sous les ordres de Bayer au rang de pharmacien en second tomba cinq fois entre les mains de l'ennemi.

Ce mal de la vie des camps lui permit de concevoir l'idée qui lui donne le droit à la reconnaissance de la France.

Les prisonniers était sous stricte surveillance; on ne leur donnait que des pommes de terre.

Parmentier au lieu d'abuser sa nourriture comme ses compagnons en avaient l'habitude réfléchit sérieusement sur l'utilité de ce légume, s'informa de sa nature et de sa manière de culture.

Mis en liberté et de retour à Paris, Parmentier n'oublia pas ses études de prison. Sachant combien il est difficile de lutter contre la routine, il pensa que pour la battre en brèche il lui fallait une haute protection; cette protection, il la rencontra dans Louis XVI lui même.

Comme il se proposait avant tout de frapper l'imagination des Parisiens, il sollicita et obtint du monarque, pour l'essai qu'il méditait, 50 arpents de la plaine des Sablons.

Ces sables stériles furent labourés pour la première fois par les soins de Parmentier qui leur confia la plante qu'il voulait réhabiliter.

Lorsque les fleurs parurent Parmentier fut émerveillé de son succès. Il en cueillit un bouquet et courut à Versailles le présenter au monarque. Louis XVI accepta l'offrande avec bienveillance, et malgré les sourires moqueurs des courtisans qui l'entouraient, il en para la boutonnière de son habit.

Marie Antoinette les favorisa en les portant coquettement dans sa belle chevelure.

De ce moment la cause de la pomme de terre fut gagnée. Les grands seigneurs et les belles dames, qui jusqu'alors avaient beaucoup ri de ce qu'ils appelaient "la folie du bonhomme," s'empressèrent d'imiter l'exemple de Louis XVI et d'adresser leurs félicitations au modeste philanthrope.

Des gardes placés autour des champs excitaient la curiosité et l'avidité de la foule; mais ces gardes n'exercaient leur surveillance que pendant le jour. Bientôt on vient annoncer à Parmentier que ses pommes de terre avaient été volées pendant la nuit.

A cette nouvelle, il ne se sentit pas de joie et récompensa largement celui qui la lui avait apportée.

Il ne voyait dans ce vol commis qu'un nouveau genre de succès.

"Si l'on vole la pomme de terre," se dit-il, "c'est qu'il n'existe plus de préjugé contre elle."

Peu de temps après il donna un grand festin où parmi les notabilités de l'époque assistèrent Franklin et Lavoisier. La pomme de terre préparée sous toutes les formes y fournit seul la substance de tous les mets. Les liqueurs mêmes en étaient extraites.

C'est ainsi que, grâce aux génereux efforts d'un seul homme, la France vit la pomme

de terre se placer au premier rang des richesses agricoles.

François de Neuchâteau proposa de substituer au nom impropre de cette solanée celui de Parmentière. Mais la modestie de Parmentier s'y refusa.

Louis XVI lui avait dit "La France vous sera bien reconnaissante, car vous avez donné à manger à ses pauvres enfants."

En vérité, la France lui sait bien gré, car si vous visitez le beau Cimetière de Père La Chaise vous trouverez un tombeau tout couvert de belles fleurs jaunes, les fleurs de la pomme de terre. Vous y trouverez aussi le nom de Parmentier.

Toutes les années les français reconnaissants viennent planter le tubercule sur la tombe de leur bienfaiteur.

Construction Work in Library Economy

Irene Warren Frances Simpson

The construction work in library economy would naturally divide itself into four parts—the printing, illustrating, binding, and bibliography.

The student who makes a book, and knows why the guides, such as the table of contents, marginal notes, and indexes are put in books, will no longer laboriously turn over the pages of a book for a given reference, but at once seek the most economical means the book affords for finding such a reference.

It is possible to begin this work very early by having the children make scrap-books, and later to bind their essays, drawings, paintings, and pamphlets, and make any necessary note-books. The course may be made more attractive by telling the children stories showing the development of book-making from the old stone and clay tablets to the beautiful books of to-day. There are many fascinating stories of the untiring devotion of the monks in illuminating the gospels, one of which Thomas Bailey Aldrich has told in his poem, *Friar Jerome's Beautiful Book.* The story of the invention of printing is always interesting, and also the story of the labors of Aldus Manutius. Portions of Dr. Gunsaulus' *Monk and Knight* give the idea of the devotion and sacrifice of these early workers, whose results no one has ever excelled. If possible, examples of the beautiful old illuminated manuscripts, great wooden-bound volumes, and later the dainty pocket editions with their rare bindings and wonderful black print, should be shown the students. Some of these early works of art tell of a devotion, love, and heroism that history does not often repeat.

This outline should deal with the printing and illustrating, but space will not permit, and therefore only the bibliopegic and bibliographical phases are outlined.

It seems best to have the children do that style of binding in which they can produce as good a piece of workmanship as possible. This means the simple binding for the primary grades, with an attempt toward more complex forms in the upper grades. All possible freedom should be allowed the child in choice of color, material, and style. The simplest binding is folding the leaves and lacing them into a cover like a Japanese book. This will also be found practical for any papers which are in single sheets or where other sheets are to be inserted from time to time. If the paper is thin, a narrow strip of firmer material should be pasted along the back to prevent the paper from tearing out.

Covers may be of plain paper, decorated by the children or bearing only a paper label with title and author, well lettered. In the upper grades a cover can be made of muslin or leather on a light weight mill board, lacing sheets into cover. The hinge is made by cutting the board in two where the joint is wanted.

In every book, care should be taken to have the child design a title-page and examine books to see what a title-page should contain. He should also dedicate his book, make a table of contents, list of illustrations, introduction, chapter headings, index, marginal and foot notes if necessary. In this way he will learn to use these valuable features of a book which the average student never notices.

The purpose of binding is to preserve, and it would be well to try to have the material to be bound well worth the binding. The children may bind a printed pamphlet or their own essays and drawings. If a printed pamphlet is used, it will of course already be folded, but if the essays of the children, it should be on paper previously folded according to the following directions.

DIRECTIONS FOR FOLDING: Lay paper on table, take a bone folding-stick in left hand, fold top edge evenly on to bottom, and crease, then left edge over to right edge, and crease. This makes two folds, four leaves, and eight pages.

COLLATING: See that every page is in its right place, the maps mounted on thin muslin, and all plates carefully pasted in. Then put in a heavy press over night.

SAWING AND SEWING: Take the book and knock it straight at both head and back, then place it between thin boards, the back projecting one-eighth of an inch. Put in a vise and screw in tightly. For an ordinary octavo divide the back into six equal parts, leaving the bottom part one-eighth of an inch longer, or, for a strange optical reason, it will look shorter. Take a saw and saw in just deep enough to imbed the bands on which the book is to be sewed. The first and last saw-cuts are for the kettle stitch and should not be quite so deep as the others. The book is now ready to be sewed. The sewing can be done without a frame, but much better work is possible with one. A sewing-frame consists of a bed with a slot in the front of it, two screws and a cross-bar, round which are fastened the cords on which the book is sewed. The other ends of the cords are fastened to nails by slip-knots on the underside of the slot in the bed; and the beam is screwed up quite tightly. The cords will then fit in the saw-cuts. The book is sewed one section at a time by running the blunt binder's-needle through the saw-cuts, around each band, and fastening it at the end to the former section by means of the kettle stitch. After the book is sewed, cut the cords so as to leave about two inches of cord on either side. Fray out the cords carefully.

FORWARDING: The volume is then ready for end-leaves, which are made by pasting the colored paper on to a rather heavy white paper. There is a large variety of papers for this purpose, known as Cobb, surface, marbled papers and other various fancy papers. The children may design their own end-leaves. The white fly-leaves and made end-leaves are then pasted on the book. If the volumes are at all heavy, joints should be made of binder's cloth or morocco to match the cover. The book is then ready to be trimmed.

Knives are very expensive things, and it may be necessary either to leave the edges in the rough or to take them to a shop to be trimmed. The book is glued thoroughly across the back and allowed to dry. It is next carefully rounded by putting in a vise and pounding into shape with a binder's hammer. The book is then ready for the boards. It is impossible to make any kind of a book unless good mill boards are used. The boards should project enough beyond the pages in front and back to be a protection. Two holes are then punched by an awl one-half inch from the back of the boards opposite each band. The ends of the bands are made into needles by applying paste and twisting, and are then laced into the boards. The lacings are next pounded flat and cut off. Head-bands can be bought ready for use or made by twisting colored silks round a piece of of vellum or button-hole stitching silk over the edge of a tape. The head-band is glued to the top of the back. The back is then covered with several thicknesses of brown paper and is ready for the cover. which may be of paper, cloth, or leather.

FINISHING: The putting on of gold letters and designs is a very difficult process, and could only be done by the oldest pupils. It is, however, possible for the children to do considerable decorating and lettering in other ways. Generally it is possible to make satisfactory arrangements with job binders to furnish the necessary supplies for such binding as is done in the schools. They are usually willing, also, to do the necessary cutting of material.

MACHINERY AND SUPPLIES: The following is a small outfit for a bindery. It is, however, possible to do very fair work in a school-room with less machinery. Prices vary considerably, and are, therefore, not given here, but they may be readily obtained of any firm dealing in binders' supplies:

1 pair of compasses. 1 square. 1 bone folder. 1 glue-pot and brushes. Paste-pot and 2 paste brushes. 2 cutting and paring knives. 1 pair of editor's shears. 1 awl for stabbing. 1 gas stove. 1 forwarder's hammer. 1 edge scraper. 1 sewing bench, 24 inches between screws. 2 12-inch backing boards. 1 lettering pallet. 1 fillet roll. 1 finishing press. 1 gold cushion. 1 small standing press. 2 sets of brass types. 1 package of binders' needles, 1 blunt, and 1 sharp. 1 pound each of Hayes' Irish linen thread, Nos. 18, 25, and 30. 1 pound each of soft twine, Nos. 3 and 4. 1 bundle of tar boards and one of straw boards. 1 package of gold-leaf. Canvas, cloth, leather, and papers.

References: The following list of books will be found helpful in practical binding, and also for the history of book-making. Zaehnsdorf gives the best practical description of binding:

Aldrich, *Friar Jerome's Beautiful Book*, Houghton; Bouchot, *The Book; Its Printers, Illustrators and Binders*, Grevel; Gunsaulus, *Monk and Knight; Historical Study in Fiction*, McClurg; Horne, *Binding of Books*, Kegan Paul; Matthews, *Book-Bindings, Old and New*, Bell; Putnam, *Books and Their Makers in the Middle Ages*, 2 vols., Putnam; Zaehnsdorf, *Art of Book-Binding; a Practical Treatise;* Technological Handbooks, Bell.

Number as Related to Meteorology in the Primary Grades

Flora J. Cooke

During the past month several letters from teachers have been received inquiring as to the value of keeping a daily record of the local weather conditions and amount of number work necessitated by such work in the primary grades.

Judging from the interest thus manifested and the number of symbolic and pictorial charts and calendars which have recently appeared in the kindergartens and schools of New York, Boston, Washington, Minneapolis and San Francisco, this is a subject of universal interest to primary teachers at present.

There seems to be but one general answer to the questions stated above: To be really valuable and educative this work must directly feed the child's genuine joy and appreciation of nature's phenomena. He uses number only because it will help him to find out what he wants to know.

If, on the other hand, this subject is chosen merely because it affords an opportunity to drill the children in fractions or so-called fundamental processes of arithmetic, wooden blocks would be a much more direct means to the end desired and the child's attitude toward nature would be less apt to be strained and pretentious.

In last year's *Inland Educator* a somewhat detailed outline of this phase of our work was given, and because it answers most of the questions asked, part of the article is quoted below.

In all of this work it is the teacher's duty to judge from the attitude, experience and questions of the children what they will care to measure definitely and what is worthy of their efforts. As in the choice of reading, she must examine their fundamental interests for help. The following work in meteorology might well be criticised as being too analytical for little children, because the motive for the selection of this work and the great variety of devices attending the study are not given. Some of the children got nothing from it but the habit of looking daily with pleasure at the sky, water, plants and animals in their environment; but surely such observation was not wholly without good effect, and incidentally the work provided opportunity in almost every line of activity which children enjoy. They made and regulated their own weather signal-flags, rain-gauges, etc. They expressed their observations by means of writing, drawing, painting, colored crayon illustrations, plays, dramatic personification and original stories. Selected stories, poems, songs, rhymes, and riddles constantly allowed the same things, in another form, to act upon them, and the test of the value of the work came in the children's increasing delight in and their desire to know more about these familiar things.

The following outline presents the number aspect of the work in meteorology for an entire year, as all the questions asked pertain to this phase of the work.

The examples, though crude in themselves, yet use number only for its one purpose—to make some mental image clearer.

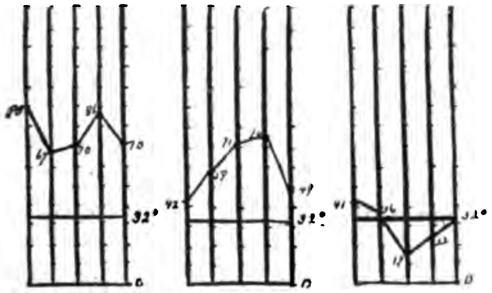
Temperature.—The children judged that it was cooler in the shade of trees and in the house than in the sunshine. To verify their judgments the use of the thermometer as a tool for measuring heat was necessary.

The numbers and lines upon the thermometer may be read: zero, 1 ten, 1 ten and 2, 1 ten and 4, 1 ten and 6, 1 ten and 8, 2 tens, three tens and 6, 4 tens; and the names twenty, thirty, forty, etc., reviewed until the children are familiar with their meaning. This makes the reading of the thermometer perfectly simple.

The children recorded the outside temperature and that of the room at a given time every day. They discovered the temperature of the soil at a certain depth, where the ants live, where the earthworms live, and in the garden, where the vegetables live. They compared the temperature under their trees with that in the sunshine, that of the water at the surface with that at the depth where the fishes live.

The record of all these experiments was kept upon a large chart, and used for reference by the children. At the end of each month they were able to construct simple charts for their individual records. A series of parallel lines with dots at regular intervals were drawn to represent the scale of the thermometer by tens. At the 32 point and at the zero point lines were drawn all the way across the chart. At the top of each line stood the number indicating the day of the month, and above all stood the name of the month. By connecting the temperature recorded at, say 9 A. M. one day, with that on succeeding days the record was completed. These data were gathered by the children and recorded daily at 9 A. M. The children noted the direction of the heat line in each case. They compared these charts with their paintings of landscape, plants, and animals during these months, also with the data of their sunshine charts. In many cases the children discovered the relation between the descending heat line and the changes which they had recorded.

Temperature Chart.—The children constructed a chart upon which they recorded the number of clear, fair, cloudy,



METEOROLOGY.

rainy, and snowy days in September, October, and November. They obtained the data from their large schoolroom charts, which were the results of their own daily observations. Upon these charts the clear days were represented by bright yellow circular disks, the fair days by dull yellow, the cloudy days by dull gray, the rainy days by dark gray, the snowy by light gray. The disks were all of a uniform size. They were cut and pasted upon the chart in such a way as to show plainly, through the different coloring, the changes in each day and thus in each month. Frost was represented by a small white circle. Each month's chart was the size of the leaves of their books—11 by 8½ inches. After a half-inch margin was taken off from one end and side, the space was divided into three equal parts—one for September, one for October and one for November. See outline for Nature Study, October COURSE OF STUDY, page 128.

The children made a working plan upon the blackboard before using the material designed for the chart. They divided each month's space into four equal parts—one for clear, one for cloudy, one for fair and one for rainy and snowy weather.

They counted up the entire number of days of sunshine in each month—fair, cloudy, etc. With their self-made circle-makers they constructed the necessary number of circles in each column to represent the number of clear, fair, cloudy or stormy days in each month. They painted these circles the colors of the disks upon the large charts; they experimented in mixing the paints, under the teacher's direction, until they got the exact representative colors.

When any (normal) child found difficulty in counting up the number of clear days—that is, if the adding or combining of the fractional parts of the disks troubled him—the teacher stopped and allowed all the class to help the child overcome his difficulty. As many devices were used and as long a time taken as was necessary to make the work perfectly clear to him. Through this work the children had vividly impressed upon them, with the help of the landscape painting, temperature charts, etc., the general characteristics of the fall months. For instance: September had only four cloudy school days, while November had ten and one-eighth. September had twice as many clear days as November. In September the heat line did not come nearer than 12° of the freezing line. In November it was one-fourth of the time below it. September had green grass, green leaves, many flowers, birds and insects. In November, the grass was withered, the trees bare, there were few birds, no flowers, and no insects. And thus, as many of his images combined constantly into an ever expanding image, the child unconsciously grew to feel the relative importance and interdependence of these things, and his own relation to them all.

During the spring months the first grade children were given the opportunity of expressing their observations through the medium of their newly acquired power in the use of a printed vocabulary. This had the advantage of requiring them to express themselves, individually and independently, as they searched out the sentences which they thought corresponded to the weather conditions, and arranged them upon their disks in such a way that they might be easily read and compared.

This tested not only the accuracy of their observations but their power to recognize and associate correctly ideas and their appropriate symbols. It also created a real necessity for reading, too often absent from such exercises.

The children needed a receptacle of some kind to hold the words and sentences used in this work, and the following box was chosen as the most convenient form for it:

WEATHER BOX.—(dimensions in inches). Nine small boxes 4x1x1, one large box to hold the small boxes 12½x3½x1. The small boxes were labeled "Day of Week," "Months," "Wind," "Clouds," "Temperature," "Rain or Snow," "Frost or Dew," "Dates," and contained sets of sentences upon the subject indicated by the label.

The child of course utilizes and applies the knowledge thus gained in his other phases of nature study and in his history and geography work. As each study requires quite as much number for the formation of clear images, the only question seems to be to discover the necessity for definite images in the various subjects studied. The only sure guide as to their relative value is to note how actively such work influences the immediate life of each individual—that is, how much he actually uses the results of his work.

Answers to Questions

"Is it possible for children to study many subjects and obtain good results?" —Parent.

That depends. If the gaining of certain amounts of knowledge is the purpose of study, scraps of knowledge, superficial ideas only will be acquired; the powers of the pupil will be dissipated; the true purpose of knowledge will not be appreciated. Therefore, artificial and vicious stimulants for effort must be used.

If the motive of teaching is character, citizenship, community life, complete living, then knowledge becomes intellectual nutrition, by use. That knowledge will be selected for each pupil which he needs, that skill in expression which he must have to use his knowledge. There is not the slightest danger of over-burdening if knowledge is acquired under the right ideal.

"Why do some children hate mathematics?"

Because they have no use for it.

Kindergarten

Anne Elizabeth Allen

Law and Order, Continued. This month, the time for doing everything and the order observed in the home industries; the timekeeper; home preparations for winter, viz: storing of coal in basements, canning fruits, providing warm bedding and clothing, will directly supply the material for our work.

Out-of-door changes: Nature's preparations for winter will be daily observed in our excursions into the park.

Preparations for a Thanksgiving festival will begin early in the month. Teachers and children will visit the market, selecting fruit to make jelly of. The children will bring recipes for making it from home and will prepare the fruit, measuring and proportioning the amount of sugar needed, and the teachers will take the mothers' part in cooking and straining.

Boxes will be provided in which to store nuts, apples, oranges, and popcorn. Fruit will be prepared, corn popped, and tables set by the children for their Thanksgiving feast, as many of the children from the primary grades and the parents of the kindergarten children will be our guests.

This will be our first formal entertainment of the year, and committees of the children will be formed and they will be encouraged to plan for themselves and to feel their responsibility as hosts and hostesses, the teachers giving aid only when necessary.

We shall gather autumn leaves from the park and such grasses as may be found for decorations for the day we celebrate in the school; and here again the children will be made responsible for the gathering, preserving, and arranging of all decorations under the guidance of the Art teachers.

Topics: Timekeepers, watches, clocks, and people.

1. Order in home life: time for rising, breakfast, lunch, dinner, play, and going to bed. Time for milkman, grocer, postman.
2. Order out of doors: time for sunrise, noon, sunset; night, starlight, moonlight.
3. Time for changes in weather: change from fall to winter; time to snow; indications of weather changes.
4. Time for changes in nature: trees, flowers, and grass.
5. Time for changes in clothing: heavier coats, hoods, mittens, overshoes, and mufflers.
6. Time for storing up provisions for winter.
7. Thanksgiving, with its obligations.

Materials: Large blocks, clay, sand, paints, circular and square tablets; gas stove, jelly glasses, fruit jars; fruits, nuts, popcorn, black board and crayons.

1. Large blocks: Building kitchens, storerooms, pantries, basements.
2. Clay: Modeling glasses and jelly fruits, and modeling and decorating dishes.
3. Sand: Making ground plans of cellars, bins, and preserve closets.
4. Tablets: Tops of tables of different shapes and sizes, according to number to sit at table, made of square tablets, and plates and cakes made of circular tablets.

Games: Oh, See the Cook in the Kitchen; Kitchen Clock; The Little Housewife; Guessing Game; Dancing Game; Old Thanksgiving Game.

Songs: *Whisk, Frisk, Run,* Hill's Songs; *Migration Song,* Hill's Songs; *The Tea Kettle,* Gaynor Songs; *Pit a Pat,* Gaynor Songs; *The Land of Nod,* Gaynor Songs; *The Popcorn People,* Gaynor Songs.

Stories and Poems: *Wynken, Blynken, and Nod,* by Eugene Field; *Which was Happiest? Story of the First Thanksgiving.*

Rhythm: Skipping alone, in circles and in line; marching to different rhythms.

Instrumental Music: *Five Marches for the Kindergarten,* Eleanor Smith; *Instrumental Characteristic Rhythms,* Parts I and II, by Clara Louise Anderson; *The Graduate's March,* by A. D. Scammell; *Wilder Reiter,* Schumann.

First Grade

Harriet T. B. Atwood

History: I. Study of home activities continued. During November the children will construct and decorate the walls of the miniature home begun in October. They will make original designs for wall decoration. Opportunity will then be given for seeing the decorations in the different school-rooms of the building, and a visit will be made to a School of Design if possible. The symmetroscope will also be used to aid the children in making conventional designs of such natural objects as they may choose to make use of. After discussion and comparison of the first designs, each child will be allowed to make his final design for the decoration of each of the rooms he has planned, and he will then proceed to decorate the walls accordingly.

II. The Story of the Pilgrims.

1. The Voyage: Pictures of the ocean, the ship and the people aboard.

2. The people whom the children should know: Priscilla, Miles Standish, John Alden, William Bradford, and Peregrine White.

3. The Landing: Pictures of the New England landscape in midwinter.

4. The Pilgrim's home-building: Making of a log house to a definite scale. Comparison with the wigwam.

5. Dress, manners, and customs in the Plymouth colony.

6. Customs of the Indians.

7. The work and play of the Pilgrim children.

8. Dramatic representation of scenes in the lives of the Pilgrims. Making of costumes by the children.

9. The story of the First Thanksgiving Day.

Literature: Some of the stories used during November will be: *The Three Squirrels*, adapted by Gudrun Thorne-Thomsen; *Hermes*, Cooke's Nature Myths; *Ulysses and the Bag of Winds*, Odyssey. Also, descriptions of Priscilla, Miles Standish, John Alden, and of the return of the Mayflower, from Longfellow's *Courtship of Miles Standish*.

Geography: Study of the New England landscape by means of pictures and lantern slides.

Recording of changes noted in the typical areas studied in October. (See October outline.) Further classification of material collected on field trips.

Nature Study: 1. Study of the November landscape by means of daily pictures on the blackboard.

2. Study of direction in connection with daily observation of the direction of the wind.

3. Recording of changes noticed in animal coverings as cold weather approaches.

4. Experiments in preparation of corn-meal, oatmeal, cracked wheat, flour, etc., from grains brought home from the farm. Experiment in the primitive Indian ways of grinding, cooking, and preserving corn.

5. Observation of the trees selected for study. Recording of last year's growth of twigs. Painting of twigs showing fall condition of buds.

Correlated Number: 1. Making of plans for walls of playhouse, portfolios for holding children's work, boxes for holding minerals.

2. Measurement of last year's growth of twigs from trees selected for study.

3. Measurement and recording of weights of children. Comparison with weights of October 1st.

Reading: 1. Sentences written on blackboard.

2. Printed lessons and records in connection with work in the central subjects, such as: Description of the visit to the farm. Description of the Mayflower. Directions for making the portfolios.

3. Selected stories:

The Ant and the Grasshopper, Lights to Literature.

The Wind and the Sun, Æsop.

4. Cook County Normal School reading slips.

Writing, Spelling, English: Recording of things seen on field trips; observations concerning changes of outdoor landscape; recording weights of children; placing words in dictionary; descriptions of regions visited; reproduction of stories in writing; constant incidental training in oral language.

School Economics: Care of school-room. Cooking of simple cereals. (See Miss Cooke's Outline.)

Art: Illustrating stories; painting, modeling, and paper-cutting; painting of November landscape; making of designs for decoration of walls of playhouse; blackboard illustration with colored crayon; painting of trees selected for study.

In illustrating the Pilgrim stories the children will work to decorate the wall space in their school-room. The probable outcome will be the picture of the First Thanksgiving feast which the Pilgrims shared with the Indians.

Industrial Art: Making Pilgrim costumes; basting hems for table-cover and curtains for book-shelves.

Dramatic Art: 1. Dramatic representation in costume of scenes in the lives of the Pilgrims. Training in hearing and reproducing sound. 2. Oral Reading--poems for memorizing:

What the Winds Bring, Stedman; *Windy Nights*, Stevenson; *Thanksgiving Day*, Child.

Music: *We Plough the Fields*, p. 24, Eleanor Smith's Songs for Little Children; *Jacky Frost*, p. 80, *The Squirrel*, p. 30, *When the Little Children Sleep*, p. 86, *The Elephant*, p. 52, *The Snowbirds*, p. 35, *The Trees*, p. 10, *Earth's Dresses*, p. 54, *Jumping Johnnie*, p. 46, *Bells that Hang High in the Steeple*, p. 34, Primer, Modern Music Series.

Manual Training: Making of walls for playhouse, boxes for minerals, portfolios for holding work, model of Pilgrim's log cabin.

During this month the children will select and begin to make their Christmas gifts, the plans for which will be found in the December outline.

(See also Manual Training Outline.)

Physical Training: 1. School-room exercises: Position, standing, and sitting; breathing exercises; skipping with the kindergarten.

2. Work in gymnasium: Prescribed work for individuals; class gymnastics; marching; primitive games.

References: Fiske, *Beginnings of New England;* Moore, *Pilgrims and Puritans;* Drake, *On Plymouth Rock;* Cheever, *The First Fast Day and Thanksgiving;* Longfellow, *Courtship of Miles Standish;* Austin, *Betty Alden;* Austin, *Standish of Standish;* Coffin, *Old Time in the Colonies.*

Second Grade

Antoinette B. Hollister

History: The subject of cave men, begun in October, will be continued through November.

A study in detail will be made of the life of these people, together with their manner of procuring, preparing, and serving food. The children of the Second Grade will prepare and serve to the children of the Fourth Grade berries, nuts, and other forest products with such facilities only as the cave men may have had.

In the cave constructed in October a place will be arranged for a fire and for beds, for which coverings will be made of skins.

Clothing of skins will be made for the clay representations of cave men.

Children will study the decoration on the tools and implements of the cave men, and will use similar designs for the decoration of their Christmas gifts.

Picture-writing of primitive peoples will be used as a basis for games which involve drawing as a means of communication.

Beginning of transportations—invention of boat.

With the puppet theater and by dramatic representation one group will picture for another the domestic life of the cave men.

Literature: Waterloo, *Story of Ab;* Fairchild, *Curious Ways of Getting Food;* Ernest Seton-Thompson, *Wild Animals I Have Known.*

Geography: Climate as it affects animal and vegetable life. Forests of tropical, temperate and frigid zones. Animals of these regions.

Adaptation of animals and of vegetation to changing seasons and varying temperature.

Nature's devices for the protection of animals and of vegetation against extremes of temperature and excessive moisture.

Homes of animals in different zones.

The above topics will be studied by means of stories, pictures, and frequent visits to the menagerie and botanical gardens of Lincoln Park. Children will give to the class in the form of reading lessons, by means of modeling or painting, or in conversation, the result of their observations and experiences with animals. They will record in any way which may seem best to them the seasonal changes in vegetation which they may observe, and any changes (due to a change of season) in the appearance or habits of animals.

Science: Animal coverings.

Adaptation of coverings to climatic conditions, to environment.

Function of color in coverings.

Use to man of animal coverings. Skins, wool, fur, and feathers.

Seasonal changes. Moulting, shedding; changes in color of coverings.

Homes of animals.

Migration and hibernation.

Children will note the disappearance of birds and the preparation for winter of the animals in Lincoln Park. The study of coverings will begin with a discussion of the clothing worn by the children, and the seasonal changes that are made in it. They will decide upon a material that seems best for any given season and give reasons.

Tests for warmth will be made of wool, cotton, and silk, with the thermometer. Tests will also be made upon ice or snow with material of different colors in order to discover which colors absorb and which reflect heat. By means of stories, pictures, and excursions, children will become familiar with the various steps in the manufacture of clothing from raw material. They will weave on the looms made in October fabrics which may be used in making Christmas gifts.

Number: The sloyd of this month will necessitate the study of the units of measurement, and of such simple mathematical operations as are involved in the making of working drawings and in the actual manufacture of the articles.

Reading: Children will have hours in the library when each child will have an opportunity to collect, through his reading, some information upon any subject which especially interests him or the class. These facts he will be allowed to present to the class in any way that may seem best to him.

Much of the reading will be in the form of simple directions for work, of announcements, etc. These will be written upon the blackboard or given to the children on printed slips.

Writing: Some of the work of the children will be recorded in writing for future reference or for presentation to other children. An effort will be made in all writing to secure correct position, and easy and rapid movement.

Language: Correct language will be required in all oral and written expression.

School Economics: The care of the room and of materials, in so far as it devolves upon the children, will be assumed by committees, who will be held responsible for this work. Committees will be allowed to make simple rules to secure order and cleanliness in the school-room.

Art: An attempt at school-room decoration will be made by the older children of the school and the Second Grade will be asked to assist in some of the operations which require little skill.

Aside from this, the work of this month will consist largely in the decoration of articles to be used as Christmas gifts, and the character of it will therefore be determined by the children themselves.

Industrial Art: Each child will weave on his loom some article of which he or some of his friends have need. Each will choose his own colors and design his own pattern. Jars of clay for use in the school-room will be manufactured and decorated by the children. They will make dust-cloths, etc., for use in the school-room as directed by committees.

Music: *Lullaby*, Brahms; *The Fall Leaves*, Songs and Stories for the Kindergarten; *Song of the Shearer*, Songs of the Child World, Gaynor; *Golden Rod*, Eleanor Smith.

Manual Training: The children are to select for themselves articles to be made during the month of November.

Physical Training: See October Outline.

Third Grade

Gertrude Van Hoesen

History: The wanderings of Ulysses continued. His preparation for returning home. Stories of his misfortunes on the journey, as: his adventures with the Lotus-eaters, King Æolus, Circe, and Scylla and Charybdis. In every case the motive back of the story-telling is the study of character; the contrast between the savage and civilized conditions very often offering the explanation for the act involved.

The story of Calypso. The aim will be to make as vivid as possible the beautiful pictures of Calypso's surroundings, — her cave and garden. With the conditions of the island before them the children will be asked to invent means for Ulysses's escape, — make the raft and work out the invention of the ship, afterward making a Greek ship of cardboard from pictures.

Other stories of courage and heroism will be told, comparing the action with those of Ulysses as to motives or kind of courage.

Geography: The water supply of Chicago. The water supply is also one of the most important problems in the building of a city. From the knowledge of the children as to the water of Chicago, and the more simple modes of obtaining it outside of the great cities, they will be led to more clearly understand the complicated system of Chicago. Comparisons will be made with the water system of the Homeric cities as an aid in the interpretation of our more intricate system.

How do we get our water in Chicago? Whence does it get into the faucet? Before trying to understand the water system of Chicago get the experience of the children concerning more primitive modes, as: 1, springs; 2, wells: (*a*) pumps; (*b*) well-sweeps; (*c*) chain or rope and bucket.

How did the water get into the spring and well? Take the children to one of the great pumping stations of the city and let them see the large pumps continually sending the water into the pipes. By means of pictures and descriptions lead the children to image the system from crib to faucet. An excursion to the crib will be very helpful, if it is possible. Tell the children the story of the construction of the first crib and tunnel.

Nature Study: The November landscape will be the basis of the Nature Study for the month. Continue the observations begun in October on trees, flowers, birds, insects, etc., keeping a more careful record of the weather. Classify the animals of Lincoln Park as to their modes of preparation for winter under natural conditions.

Continue work on constituents of fruit and vegetables.

Special Point — Chemistry of Decay. Cause of the changed landscape. What is happening to everything around us? In order to lead the children to see that the fall of the leaves, the passing away of flowers and grass is not loss, perform a few simple experiments, to show that the plants are simply breaking up into their elements. 1. Experiments to show that CO_2 passes off in decay. Experiments showing other sources of CO_2 to be: (1) fire; (2) breathing; (3) disintegration of rock. 2. Experiments showing that after decay is over ash or mineral matter remains.

Correlated Number: 1. Average temperature for October, necessitating addition and partition. Comparison of average temperature of the first week with the last. Does that in any way explain the change in the landscape? 2. Average temperature for the different weeks of November. 3. Experiment showing the capacity of each child's lungs in pints and quarts. Find the amount of CO_2 that each child exhales in one breath; the entire class. Point — necessity for ventilation.

Reading: Selections from all sources correlated with the other work, and with the children's interest in myth and fable.

Writing and Spelling: Records of all nature observations and experiments. Descriptions of our water system and other modes of obtaining water. Dramatization of stories in written form.

School Economics: The formation of committees for the care of the room and material; also for the preparation and service of the lunch.

Cooking: See Miss Cooke's Outline.

Art: The record of the changing landscape in color. Study of individual trees. Painting and modeling of fruits, vegetables and animals. Illustrations of stories in color, chalk, and clay.

Industrial Art: Christmas work.

Dramatic Art: Dramatic presentation of some of the scenes in the travels of Ulysses, as his visit to Circe's Palace. Training in hearing and producing English vowel sounds.

Poem to be studied and memorized: *Time to Go*, by Susan Coolidge.

Music: See Miss Goodrich's Outline.

Manual Training: The Christmas work will be planned and begun in November. The plans will be in the December Outline.

Models of different kinds of wells will be made.

Physical Training: Continue October work.

Fourth Grade

Clara Isabel Mitchell

The work of the Fourth Grade will be a continuation of that outlined in the COURSE OF STUDY for October; woodworking, cooking, weaving, needlework, elementary bookbinding, drawing, painting, modeling, care of plants and animals, and field excursions.

The so-called lessons and recitations will be discussions, reading, writing and laboratory experiments planned as helps to the working out of the problems arising in the daily work.

Games, plays, music, and gymnastic drill will be recreative as well as educative.

Cooking: The cooking will be the preparation of corn for the table; parching, boiling, and grinding. The food successfully prepared will be served as part of the morning luncheon.

Book-Binding: Christmas work will begin this month in the making of books containing prints, or original drawings by the children with their own stories and explanations. Paper covers will be designed and decorated by each child to suit his idea of the contents.

Weaving: Basket fiber will be colored with aniline dyes and woven into baskets for Christmas presents.

Woodwork: Wooden calendar frames and wooden boxes and trays for Christmas presents will be made in the shop.

Metal-Working: If experiments in metal-working give satisfactory results, the children will commence trays of beaten brass for Christmas gifts.

Sociology and History: Excursions into the city will continue throughout the month for observing the great activities of city life and the people engaged in them. Carrying out the plan indicated in the October outline, the children will learn as much as possible of the lives of the different colonies in Chicago. By means of pictures, stereopticon views, stories, and descriptions they can know also something of the countries from which these people emigrated. This will lead to the question of the cause of emigration to Chicago, a question which can best be understood through the study of Chicago's history, which gives explanation of all colonization from the beginning. The history of Chicago will be studied, therefore, for better understanding of the city we live in, of what it means to its people, and what it may mean. The work in Geography and Meteorology of the previous month having given the background of climate and topography, the class will be prepared to begin the study of history. It is probable that the work already outlined will occupy all of the month; certainly not more will be done than the merest preparatory reading about the aboriginal Indians of the region.

Geography: The Geography following the need of the history lessons will be stories and descriptions of the sea; pictures of the sea; dangers and uses as a highway for travel; water-routes to Chicago from the countries studied and read about; lives of sea-faring men; pictures of the animal and plant life of the sea; its work in building and wearing away continents. Lessons correlating the geography, history, and sociology of Chicago will connect the corn industries — farming, transportation, milling, baking, buying, and selling — with the children's own experience. These will be given through pictures of the corn regions of the world, railroad and shipping maps, visit to a mill, the board of trade, and a feed-store.

Sewing: Hemming, running, and felling will be taught in making denim book-bags for First Grade children.

Nature Study: As a help to the cooking, the children will learn the iodine test for starch and the heat test for albumen—the chief ingredients of corn. The use of starch and albumen as food for the germinating plant will be studied in the seeds planted in the school-room.

Continuing the observations of the weather conditions of this region, attention will be specially directed to clouds, rain, and snow fall. Experiments in the laboratory will be planned to explain evaporation and condensation of moisture. The November landscape will be painted as part of the weather record.

Arithmetic will be used to make clearer the relationship of heat to evaporation and condensation of water. Equal quantities of water under differing degrees of temperature will be measured for amount of evaporation. The gill, pint, quart, and gallon will be used as measures, also the cubic centimeter and decimeter. Results will be stated in terms of fractional parts and per cents. Accounts of materials and cost will be kept in an account book and made the basis of arithmetic lessons.

Reading and Dramatic Art: Many selected stories and poems appropriate to the Thanksgiving season will be told and recited in the morning exercise by students of all grades. The Fourth Grade will read and dramatize Hiawatha's Fasting as appropriate to the study of corn; they will study the stories and folk-lore of the nations represented in Chicago, among them stories from *Cuore*, as pictures of the school life of Italian boys. They will continue the story of Siegfried as a characteristic Scandinavian myth.

Music: Making of original songs will continue as begun in October. Trade songs will be taught by rote in connection with excursions to the industries of the city.

Songs: *Harvest* (hymn), Songs of Life and Nature, p. 186; *We Plough the Fields*, Eleanor Smith's Songs for Little Children, p. 24; *Wind Song*, Modern Music Series, First Book, p. 94; *The Months*, Modern Music Series, Third Book, p. 174; *Sing a Song of Workshops*, p. 20, *The Blacksmith*, p. 90, Modern Music Series, Primer.

Entertainment: Stories, pictures, drawings, descriptions, songs, games, and plays will be planned as entertainment of other classes to be invited into the Fourth Grade room.

Games and Plays: Directed play will be a part of each day's program; games chosen by the children, sense games suggested or invented by children or teacher; marches, runs, and skips in rhythm; dancing.

Excursions: Excursions will be made to the Art Institute to see the pictures of the artists of other countries, especially those best known and loved by the foreigners of this city; to the Academy of Sciences and Field Museum to see the Indian collections; to shops to see Eastern rugs, pottery, and metal-work; to a shoe-shop, a bindery, and a clothier's sweat-shop, if possible.

Drawing, Painting and Modeling: Stories and subjects of lessons will be illustrated when interesting enough to arouse feeling sufficient for such expression. There will be modeling and baking of primitive dishes like those once made by the Indian tribes of this region. These will be decorated with paints in original designs. Christmas gifts will be decorated with the children's own patterns. Illustrations will be drawn or painted for the Christmas books which are to be written, with favorite stories or pictures as subjects.

Physical Culture: In the school-room special exercises will be given for improvement of children's standing position; games of hopping, throwing, and jumping, specific training for running, jumping, and vaulting will be given in the gymnasium. The games will be battle-ball and curtain-ball.

Fifth Grade

Willard Streeter Bass

History

Subject: The development of local self-government and of a representative central government in New England.

The Tendency of the Puritans to Settle in Towns. Draw a map showing the sixteen towns founded in Massachusetts before 1634. Consider the causes of the existence of separate towns: (1) Emigration of church congregations in a body; (2) Geographical conditions favorable to commercial independence.

Organization of Town Governments. Consider difficulty of having the towns governed from Boston and the love of the people for independence. Describe the origin of the town meetings in Dorchester and Charlestown. (The children will organize and act out a town meeting, electing the town officers, voting money for highways, schools, etc., and doing other necessary business.)

Dispersive Forces in Massachusetts. Describe the religious intensity of the age, its productiveness, its different religious opinions and intolerance. Show that the Puritans, having come to Massachusetts to found a state according to their interpretation of the Bible, felt compelled to banish all those who held and taught opinions conflicting with the principles upon which their government was established; and show how these differences of opinions and banishments led to the formation of new colonies.

Roger Williams. Tell the story of Williams' trial and banishment and the founding of Rhode Island.

Joseph Hooker. Describe the rivalry between Hooker and Cotton, the discontent of the settlers at Newtown and their resolve to emigrate to the valley of the Connecticut. Show pictures of and describe the Connecticut valley and their journey there.

John Davenport. Tell how Davenport came to Massachusetts with a party of Londoners, and not finding favorable conditions there, went to New Haven to establish his ideal state.

Maine and New Hampshire. Settlements had been founded in these two states by Gorges and Mason. The religion was in general that of the Church of England, and hence utterly opposed to that of the Puritans.

The New England Confederacy. Draw a map showing the position of the various New England colonies and of the Dutch in New York and the French in Canada. Show that there was danger of attack from both of these and from the Indians as well, and that on account of domestic disturbances little help could be expected from England in case of war; hence the need for a union of the Puritan colonies. Describe the meeting of delegates from Plymouth, Connecticut, and New Haven with those of Massachusetts in Boston, and the formation of the United Colonies of New England. Discuss the importance of this union in itself and as a model for the confederation of the thirteen colonies in 1774 and for the United States.

The Colonies and the Indians. Recall the treaty of Plymouth with Massasoit and how well it was kept. Tell briefly the story of the Pequot war. Show the intention of the colonists to deal fairly by the Indians, as expressed in laws regulating trade with the Indians and purchase of land from them, and in attempts to convert them to Christianity. In spite of these intentions the Indians became fearful of extinction, and under the leadership of Philip formed a coalition for the purpose of exterminating the whites. The result—the terrible King Philip's war—was a victory for the white men.

Education in the Colonies. The serious purpose of the Puritans is shown by the founding of Harvard College and the "faire grammar school" in 1636 (the year of the Pequot war) and by laws requiring parents to educate their children (passed in 1642) and requiring towns to establish schools (passed in 1654).

Industries and Home Life. Let the children continue the work in spinning, weaving, candle-making, etc., begun last month, and keep them always in touch with the home and industrial life of the colonies.

Thanksgiving Day. Describe the circumstances which led to the first Thanksgiving Day, and show how the present national observance of the day typifies the national extent of the Puritan institutions of local self-government and representative central government.

Writing: Reasons for the formation of the New England Confederacy.

Art: Drawing and painting of scenes from colonial life. This will involve some study of the architecture and costumes of the people

Industrial Art: Spinning of wool, weaving of homespun, making of Puritan costumes.

Manual Training: Making of a colonial loom.

Reading: *The Puritan Boy* in *Ten Boys on the Road from Long Ago to Now.*

Speech, Oral Reading and Dramatic Art: Dramatic representation of an old New England town meeting; selections from *Miles Standish.*

Music: Song. *Duke Street*, School Hymnary p. 155; *Thanksgiving Hymn*, Songs of Life and Nature.

References; For Maps. Eggleston, *The Beginners of a Nation*, pp. 275, 296, 343; Drake, *The Making of New England;* Charles Carleton Coffin, *Old Times in Colonial Days.*

Geography

Subject.—Glaciers and Glacial Action about Chicago. (Continued.)

Study of Present Glaciers.

I. Alpine Glaciers. Show pictures of glaciers, with moraines, crevasses, etc. Read descriptions of the glaciers. Discuss motion of glaciers: 1. Cause, excess of yearly snowfall over melting. 2. Manner, like a river, *i. e.* faster at the top than at the bottom, and in the middle than on the sides. 3. Effects (*a*) on the ice itself, structure; (*b*) on the ground under and at the sides of the ice, striations, polish, etc.; (*c*) on the material carried on, within, and under the ice.

Show pictures and read descriptions of Arctic glaciers. Discuss their motion, showing that no mountains are necessary for the motion of these glaciers.

II. Can the Appearances Observed at Stony Island be explained by Glacial Action? (*a*) Are the drift, striations, etc., observed similar to those produced by modern glaciers? (*b*) If the effects observed are due to glaciers, from what direction must the glacier have come?

The great North American glacier, its extent, the possible causes of its origin, the results it has produced.

III. Topography of New England. Study the characteristic features of the New England landscape by means of pictures. Compare the effect of glaciation in that section with its effect about Chicago. Make a sand map of New England, showing its position with regard to the river basins of the St. Lawrence and Champlain and the Hudson. Locate on this map the settlements studied this month, including the French and Dutch as well as the Puritan colonies.

Number Work: Compare the size of glaciers, as the Muir Glacier and the Mer de Glace, with each other, and with familiar objects. From the size of the glacier and the weight of a cubic foot of ice, find the weight of one or more of the glaciers considered.

Compare the lengths of the Hudson, Champlain, and St. Lawrence rivers.

Writing: Reasons for thinking that a great glacier once covered the northern part of North America, and a description of its action.

Modeling: Modeling of sand map of New England.

References

Kingsley, *Madame How and Lady Why,*

pp. 97–115; Tyndall, *Forms of Water;* Tyndall, *Hours of Exercise in the Alps.*

Nature Study

METEOROLOGY: Continue the use of the thermometer, and rain-gauge and the weather record in the same manner as last month.

ASTRONOMY: Measure the noon slant of the sun every week, particularly on November 22d; compare with the slant on October 22d. Find the area of level ground covered by a beam of sunshine of given cross-section. Compare with the area covered by the same beam October 22. Compare the intensities of sunshine in the two cases. Compare also the average temperature of the two months.

ZOÖLOGY: Preparations of Animals for Winter. Observe in all possible ways the animals which are (1) escaping winter by migration; (2) preparing for winter by the growth of a winter coat and the storing up of food supplies, etc.; and (3) preparing to hibernate. Compare the first two classes in regard to organs of locomotion and coverings. Let the children collect and bring to the school-room as many varieties of small animals, snakes, toads, frogs, turtles, larvæ of insects, etc., as they can, and there watch their behavior as winter approaches.

Animal Movements: Study by means of pictures, visits to the zoölogical gardens, and museum specimens the organs of locomotion in various classes of animals. Notice what classes are adapted to migration. Study similarly the organs of prehension. Observe how the development of one pair of limbs as organs of prehension impairs their usefulness as organs of locomotion. Compare, in this particular, man, the monkey, the squirrel, the horse, and the bird.

Animal Coverings: Visit Lincoln Park and observe what animals have a new coat for winter, and how it differs in length, thickness, and color from the summer coat. Study the coverings of animals which live in (1) water; (2) in swamps; (3) on dry land; (4) in the air and trees. Make a careful study by means of specimens brought to class of (1) wool, (2) hair, (3) fur, (4) feathers. How does man make use of these?

Number Work

Use the data obtained in Nature study to solve the following problems:

1. Find the part of the days of October (expressed as a common fraction and as a per cent) which have been fair, cloudy, rainy, and frosty.

2. Find the total rainfall for the month. Find the part, expressed as a common fraction and as a per cent, which it is of the average rainfall for November.

3. Find how many times as great the area of level surface covered by a given beam of sunshine is as the cross-section of the beam itself. Find what part the intensity of sunshine on the level surface is of the intensity in a cross-section perpendicular to the direction of the beam.

4. What part (expressed both as a common fraction and as a per cent) of the animals observed migrate? What part grow winter coats? What part lay up a store of food? What part have coverings which are in some way useful to man?

5. Find the part the day is of the whole twenty-four hours. Find the part the night is. Find the daily and weekly changes in the length of the day. What part (expressed both as a fraction and as a per cent) is this of the whole day? Of the whole twenty-four hours?

Writing: How animals prepare for winter.

Oral Reading: Selections from *Redruff* in Ernest Seton Thompson's *Wild Animals I Have Known.*

Drawing: Diagram showing the noon slant of the sun October 22d and November 22d, and the areas covered by a beam of given cross-section on the two dates.

Rapid drawing of skeletons of fore limbs of man, monkey, squirrel, and horse.

Painting: November landscape. Animals in Lincoln Park, showing color of winter coats.

Making: Boxes needed for preservation of specimens and animals collected for observation of winter habits.

Music

Nutting Song, p. 162; *Autumn Song,* p. 140; *Harvest Song,* p. 66—all in *Second Book, Modern Music Series.* Harvest (hymn), *Songs of Life and Nature,* p. 186. *Spinning Song,* Modern Music Series, Third Book, p. 114. *We Plough the Fields,* Eleanor Smith's *Songs for Little Children,* Book 2, p. 24. *Wind Song,* Modern Music Series, First Book, p. 94; *The Months,* Modern Music Series, Primer, p. 62; *A Snowy Day,* Modern Music Series, Third Book, p. 174.

References

For Meteorology and Astronomy, see references for last month. For Animal Movements, Orton, *Comparative Zoölogy*, pp. 154–166; Chapman, *Bird Life*, pp. 14–34; Thomson, *The Study of Animal Life*, pp. 120–124; Jackman, *Nature Study in the Grammar Grades*, p. 334; Semper, *Animal Life*, pp. 101–117.

Sixth Grade

Edith Burnham Foster

History

The subject for the month is Marco Polo and the Routes of Trade. In this way the subject of China connects naturally with that of Venice and the other Italian cities which will be studied later in the year, and the history subjects for the year thus coördinate readily with Eurasia, the topic for the year's study in geography.

I. When did Europe first get full and authentic knowledge of China?

1. The Polos, Maffeo and Nicolo: *a.* Their first journey to China; *b.* Their embassy to the Pope; *c.* Marco Polo's journey; his services to the Great Khan; his travels; his book; its reception in Europe.

II. Europe's trade-relations with the Orient in the Middle Ages.

1. The Europeans imported silks, gold, precious stones, ivory, cashmeres, dyewood, perfumes, and spices. Of these, spices and silks were particularly desired. Woolens were the principal export.

2. Trade with the East was stimulated by the Crusades.

a. Venice and Genoa offered their fleets to transport soldiers and pilgrims and received trading privileges in Constantinople in return.

3. The routes of trade: *a.* The Northern, by the Black Sea, the Phasis, the Cyrus, the Caspian, the Oxus, and the Indus. *b.* The Middle: Through Syria and by way of the Euphrates and the Persian Gulf. *c.* The Southern: By way of the Mediterranean, Alexandria, and the Red Sea.

4. The Conquest, in the thirteenth century, of Constantinople by the Venetians and the leaders of the Fourth Crusade, and the consequent Venetian monopoly. *a.* The regaining of Constantinople, in 1261, by the Greek Emperor, with the aid of the Genoese, the consequent privileges granted the Genoese, and the forcing of Venice to the old Alexandrian route.

5. The closing of the routes of trade by the Turks and by the fall of the Mongol dynasty, and the consequent search for new routes. *a.* The Westward or Spanish route; *b.* The Eastward or Portuguese route. Prince Henry the Navigator; Diaz and Vasco de Gama.

References

Knox, *Travels of Marco Polo;* Thomas Wright, *Marco Polo's Travels;* Hugh Murray, *Travels of Marco Polo;* W. E. Griffis, *The Romance of Discovery;* Abbé Raynal, *History of Europeans in Indies;* John Yeats, *Growth and Vicissitudes of Commerce;* George Burton Adams, *Mediæval Civilization;* Charles Morris, *Civilization;* Robert Kerr, *Collection of Voyages and Travels;* Octave Nöel, *Histoire du Commeree du Monde;* John Fiske, *Discovery and Conquest.*

Dramatic Reading: *Rushan Beg*, by Longfellow.

Geography

The subject for the year will be Eurasia. The subject for the month is China.

Before proceeding to China the children will take a general survey of the topography of Eurasia, noting (*a*) the mountain regions, (*b*) the table-lands (*c*) the plain regions, (*d*) the coast-lines (*e*) the areas as compared with those of North America and of the United States. They will draw relief maps of the continent, and model some of the more obvious features in sand. After this the work will proceed somewhat as follows :

I. Situation of China : latitude and longitude ; relations to mountains and sea.

1. What, therefore, are we to expect of its climate ? Diversity (compared with United States); winds ; rainfall.

II. Natural divisions of the country: 1. Mountain region; *a.* Situation; *b.* Systems; *c.* Extent; *d.* Height; *e.* Effect on rainfall.

2. Hilly region (south of Yang-tse).

3. Great plain: *a.* Origin; *b.* Extent; *c.* Fertility; *d.* Population; *e.* Products; *f.* Grand Canal.

4. River Systems: *a.* Hoang-ho in north. Higher than its banks, in places; results, floods; *b.* Yang-tse in center; *c.* Li in south; *d.* Direction; *e.* Length; *f.* Means of transportation afforded.

5. The loess: *a.* Theories as to its origin; *b.* Topographical features; *c.* Agricultural value.

6. Productions: Rice, wheat, barley, millet, and maize, in north; pulse, tobacco, cotton, hemp, opium, sugar-cane, tea, silk, camphor; coal resources.

References: J. Thomson, *Through China with a Camera;* W. and A. K. Johnston, *Atlas;* Johnson, *Universal Encyclopedia;* Wells Williams, *Encyclopedia Britannica, The Middle Kingdom;* Reclus, *The Chinese Empire;* Stanford, *The Chinese Empire.*

Number Work: Compare area of China with that of North America and United States, by ratio, percentage, and fractions. Compare river lengths, coast-lines, mountain heights, etc., in same way. Compare population and exports with those of the United States.

For painting, drawing, hand-work, etc., see History Outline for October.

Nature Study

The special study for October was the preparations of plants for the winter. The work for November will embrace certain relations between insects and plants, and the preparations for the winter of insects and other animal forms.

The children will first of all collect galls, distorted leaves, stems, and webs. After examining and discussing these and speculating as to their origin, they will proceed on somewhat the following plan:

1. The use of plants by insects: *a.* As food; parts attacked; effects. Time when they are attacked; results. Amount of injury done. Protective devices; hair, bristles, prickles, gum. *b.* As homes (miners, rollers). *c.* As depositories for eggs.

2. The preparations of animals for the winter: *a.* Insects: Depositing of eggs; making of cocoons, etc. *b.* Animals: Hibernation; lowering of vital functions; movement; circulation, respiration; source of nutrition; growth of extra covering; migration.

The children will make a collection of larvæ and watch their evolution during the succeeding months, and will, if possible, observe the hibernating habits of various animals.

Dramatic Reading: Poem, *Robert of Lincoln,* Bryant.

Number Work: (See Jackman's *Nature Study for the Grammar Grades,* pp. 3 and 4.)

Drawing: Drawing of typical injuries to leaves, etc., and of like parts uninjured.

Painting: The landscape calendar. Color modifications due to insect depredations.

Hand-work: Making of insect cage. Making of insect mounting board. For wood-work see Manual Training Outline.

Songs, *Harvest* (hymn). Songs of Life and Nature, p. 186; *Snowy Day,* Modern Music Series, Third Book, p. 174; *Nutting Song,* Modern Music Series, Second Book, p. 162; *He Prayeth Best* (2 parts), p. 32; *We Merry Minstrels* (three-part round), p. 15, Modern Music Series, Third Book.

References

MacMullen, *Population of an Old Pear Tree;* Badenoch, *Romance of the Insect World;* Lubbock, *Insects on Plants and Flowers;* Jackman, *Nature Study for Grammar Grades;* Jackman, *Nature Study and Related Subjects;* Encyclopedia Britannica.

Seventh Grade

Katharine M. Stilwell

History

ROME: THE REPUBLIC. I. How the Romans worked out self-government through the struggle between the patricians and plebeians.

1. The Social Struggle. Tribunate, Land Question, and Decemvirate.
2. The Political Struggle. The class will read on the above topics in the histories named in the Pupils' Reading List. The knowledge thus gained will be supplemented by the teacher's explanations.

II. Rome as mistress of Italy.

1. How Rome conquered the mountain peoples, repelled the Gauls, and finally conquered the various tribes of Italy. Conditions will be presented from which the class will draw inferences. Some reading also will be done on the above topics.
2. The Unity of Italy.

III. Rome's Conquest of the World.

1. Rome and Carthage — the West. (*a*) The Punic wars (map of territory); causes; immediate pretext; comparison of combatants; leaders; result. (*b*) Effect in Italy upon the social, moral, and political conditions.
2. Conquest of the East.

Children's Reading List: Harding, *City of Seven Hills;* Creighton, *Rome,* pp. 11–35; Gilman, *Story of the Nations — Rome,* chap. 4; Ihne, *Early Rome,* pp. 112–126; Sewell, *History of Rome,* pp. 39–64; Smith, *Smaller History of Rome,* pp. 35–63; Cotton, *Young Folks' History of Greece and Rome;* Yonge, *Rome;* Guerber. *Story of the Romans.*

References

Pelham, *Outlines of Roman History;* Mommsen, *Rome;* Duryea, *History of Rome;* Myers, *History of Rome;* Liddell, *History of Rome;* How and Leigh, *History of Rome;* Shucksburg, *History of Rome;* Livy, *Punic War.*

Geography

The Continent of Africa.

1. Our relation to Africa. Current news of Africa. Read *Current History, The Outlook, The Great Round World,* etc. Relation of other countries to Africa.
2. Location: Direction from us. Distance. How to get there. Time necessary. Its location with regard to other continents.
3. Size: Shape, length, width, area, coastline, average height compared with other continents. Effect of these features on the history of the country.
4. Surface: Model in sand the mountains, plateaus, rivers, lakes, and plains. Compare with other continents.
5. Character: Locate desert regions. (See October Outline.) Locate regions of greatest rainfall and monsoons. Locate highest and lowest average temperature. Where is the sun at noon to-day in North Africa? In South Africa? (Correct the judgment of climate by use of Longmans' Atlas.)
6. Locate forests. Locate the animal life of the continent.
7. The people: Their life and industries. The natives. The principal cities. Where are the possessions of the chief powers?

Draw relief map of the continent. Draw or paint typical landscapes, characteristic occupations and types of people.

Children's Reading: McCabe, *Our Young Folks in Africa;* Kingston, *In the Wilds of Africa;* Manning, *The Land of the Pharaohs;* *Scribner's Geographical Reader;* Heawood, *Geography of Africa;* Knox, *Boy Travellers in Egypt;* Longmans, *School Geography;* *Young Folks' Cyclopedia of Persons and Places.*

References

Reclus, *Bird's-eye View:* Encyclopedia Britannica; Stanford *Compendium of Africa;* Reclus, *The Earth and Its Inhabitants;* Brown, *Countries of the World: Africa;* Vincent, *Actual Africa;* Guyot, *Earth and Man;*

Ratzel, *History of Mankind*, Vol. II; Stanley, *Through the Dark Continent;* Stanley, *The Congo;* Keltie, *Stanley's Letters;* Hinman, *Physical Geography;* Keipert, *Manual of Ancient Geography;* Macturk, *Africa;* Marsh, *Earth as Modified by Human Action;* Ritter, *Comparative Geography.*

Nature Study: I. Study of weather conditions continued as indicated in the October Outline.

II. Following the distribution of seeds, the pupils will account for that part of the plant which seems to decay by studying the Chemistry of Decay.

1. What is in the plant?

[See Directions for Laboratory Work.]

The pupils will average the class results of the experiments and represent these proportions on a piece of wood one meter long, one centimeter wide, and one centimeter thick. They will then discuss the following points:

What is decay? Where did the tree get all these elements? What becomes of each when the leaves decay? What agent decomposed the leaves in the experiment? What agent does this work out of doors? When does this take place? What would be the effect if these elements were all given off now? What do you think of this as a provision of nature?

Weigh and dry twigs. Weigh again. What per cent is water? What per cent is gas? What per cent is ash? What per cent is potash?

Select a block of wood in the sloyd shop. Measure out in bottles the amount of water, ash and potash found in this block.

In a tree containing 8,000 cubic feet, how many gallons of water? How much ash? How much gas? How much potash? Draw to a scale, showing these proportions. Name the source of each element. How did the tree get the mineral matter from the soil?

In six gallons of water there is one gram of solid matter. (See City Water Office Report.) What amount of new material has been added to the tree? (Measure new growth.) How many pounds of ash are there in each 100 pounds?

If each gallon of water supplies one gram of ash, how many gallons are needed to supply the ash in this year's growth on this tree? How many barrels? What size tank is needed to contain this water? Draw to a scale.

III. All leaves do not decay immediately on falling. The pupils then will take up the study of Fossils.

1. Fossil Plants: Evidences that the fossil was once a plant.

2. How it became a fossil. *a.* Examine rock, stratified, made by water; fine material, silt deposited by still water. *b.* What became of the plant? Casts, imprints, petrifications. Picture with clay the process of fossilization.

3. Conditions under which a plant must have lived. (Same that plant life demands to-day.) Picture the appearance of the earth at that time.

4. Subsequent events. Teacher draw fossil beds at Mazon Creek, Ill. Limestone layer 12 feet thick. In a stream 60 feet below the limestone were found the fossils. *a.* How did they get there? *b.* What has happened since? (building period; wearing period.) Probable length of each?

5. What the fossil teaches us. *a.* About the past: age of the world; former appearance; changes gradual. *b.* The probable future. Drawing to illustrate experiments. Painting of fossils.

References: *Chemistry.* Hooker's Chemistry, p. 313; Stockhart's Chemistry, p. 435; Popular Science Monthly, Nov. 1879, *Respecting Rubbish;* Murche, Vol. III, *Object Lessons in Elementary Science;* Conn, *Story of Germ Life; Decay.*

Directions for Laboratory Work

Laboratory Lesson.—To find what is in the plant.

(In all laboratory work, make careful, definite notes.) Ask no questions in the laboratory.

Directions for Experiment.—Weigh 20 grams of leaves. Put in tin pan on standard, about 3 inches above the flame. (See that you have a clear blue flame from Bunsen burner. Strike match at the side of the box on the end of the table.) Carefully note results. What does the flame prove? What do the sparks prove? Weigh what is left. What per cent has disappeared? What kind of material is left? Preserve it for a later experiment. Write results of this experiment.

Laboratory Lesson.—To find what is in the leaves.

DIRECTIONS FOR EXPERIMENT.—Break into small pieces and weigh enough leaves to fill two-thirds of a clay pipe. Cover with a piece of filter paper. Seal the pipe with a thick paste made of plaster of paris and water. Place the pipe in the hole in the wire gauze on the standard, about three inches above the flame. When smoke issues from the end of the stem, test with a lighted stick. Repeat several times at short intervals. Carefully note results. Hold a piece of clean glass in the smoke. What is the result? Test with red and with blue litmus paper. When smoke ceases, cool the pipe, uncover, and empty it. (Be sure to mix no plaster of paris with contents of the pipe.) Examine and weigh the contents. Sum up the experiment. State the results and make inferences from each. Read on the wood the alcohol, creosote, and tar. (See references.) Tell the class how they may prove the presence of N.

LABORATORY LESSON.—DIRECTIONS.—Use the ash left in the first experiment. Filter the water through this ash. Test filtrate with litmus paper. Evaporate the filtrate. Examine the contents of the filter paper. Test some of this residue with H. C. L.

Sum up the results of the experiment. What have you proved by each step?

Mathematics: As indicated in outlines, number will be used in correlation with the other subjects.

Simple exercises in algebra will be given.

Oral Reading: See Miss Fleming's outline.

Study of poems: *Virginia*, by Macaulay; *Down to Sleep*, by Helen Hunt Jackson; *The Petrified Fern*.

Latin: The life of the Romans will be continued. This study will be supplemented by simple reading lessons in Latin. See printed slips. Grammatical forms will be learned as they occur in these reading lessons.

Gymnastics: See Mr. Kroh's outline, p. 221.

Sloyd: This month the pupils will begin making Christmas presents. Each pupil, with the assistance of the teacher, will select his own work. Plans will be drawn, and amount of material, with cost, computed before the shop work is done.

Industrial Art: Sewing and weaving.

School Economics — Continued. See Mrs. Norton's outline, p. 207.

Music: *Harvest* (hymn), Songs of Life and Nature, p. 186; *Snowy Day*, Modern Music Series, Second Book, p. 162; *Nutting Song*, Modern Music Series, Second Book, p. 162; *He Prayeth Best* (two parts), p. 32; *We Merry Minstrels* (three-part round), p. 15, Modern Music Series, Third Book.

Latin

The history lesson preceding has for its subject some feature of Roman life. This is to be supplemented by the Latin reading lessons which follow.

Pictures of the various objects mentioned will be presented and their Latin names written on the blackboard.

Grammar is to be taught only as an aid in interpreting and expressing thought. The system of grammar used is that of Professor Hale, of the University of Chicago.

The books used for suggestions on private life are: Becker, *Gallus;* Wilkins, *Roman Antiquities;* Preston and Dodge, *Private Life of the Romans;* Harper's Classical Dictionary; Rich, Dictionary of Greek and Roman Antiquities.

Reading Lesson

1. Puella bullam gerit.
2. Bulla injūriam āvertit.
3. Bullæ puellās dēfendunt.
4. Puellæ tunicās gerunt.
5. Fībula tunicam cōnectit.

Vocabulary

NOUNS

puella—girl.
bulla—amulet.
fibula—clasp.
tunica—dress.
injuria — harm. (cf. injury.) (cf. confer= compare.)

Verbs

gerit—wears.
avertit—wards off. (cf. averts.)
defendit—(cf. defends, protects.)
conectit—(cf. connects, fastens.)

Conjunction

et—and.

Points to be Made

1. Roman way of expressing an idea. Order of words in a sentence.
2. The omission of the article.
3. Nominative and accusative nouns, singular and plural, first declension.
4. Verbs, third conjugation; present, third, singular and plural.
5. Conjunctions.
6. Pronunciation.

To be Translated into Latin

1. The girls wear amulets.
2. The amulet protects the girl.
3. Clasps fasten the dress.
4. The girl wears the amulet and the tunic.

Reading Lesson

1. Puella tunicam albam gerit.
2. Et tunicam et soleas gerit.
3. Geritne puella violās?
4. Puellæ bullās et armillās pulchrās gerunt.
5. Palla longa tunicam albam tegit.

Vocabulary

Nouns

armilla—bracelet.
palla—mantle.
viola—violet.
solea—sandal.

Adjectives

alba—white.
pulchra—beautiful.
longa—long.

Verb

tegit—cover.

Conjunctions

et, et—both, and.

Points to be Made

1. Subject in the verb.
2. Adjective to modify subject and object.
3. Order of adjectives in the sentence.
4. The interrogative sentence.

To be Translated into Latin

1. The girls wear pretty violets.
2. Does the mantle cover the dress?
3. The girl clasps her bracelet.
4. She fastens her sandals.

Reading Lesson

1. Vīlla est māgna.
2. Vīlla est rūstica.
3. Tua vīlla est pulchra, sed mea vīlla est māgna.
4. In meā villā est bibliothēca.
5. In meā villā est culīna. Culīna est parva.
6. Mea serva Julia, cēnam coquit.

Vocabulary

Nouns

villa, house.
culīna, kitchen.
bibliothēca, library.
serva, servant.
Julia, Julia.
cēna, dinner.

Conjunctions

sed, but.

Adverbs

cur, why.
non, not.

Adjectives

rustica, country.
mea, my.
tua, yours (to one person).
magna, barge.
parva, small.
bona, good.

Verbs

est, is; sunt, are.
coquit, cooks.

Preposition

in (with abl.), in.

Points to be Made

1. Predicate adjective.
2. Nouns in apposition.
3. Adverbs.
4. Ablative (locative) case.
5. Preposition.

To be Translated into Latin

1. Is the country villa a large one?
2. In my villa are a library and a kitchen.
3. Is the library pretty?
4. In your house is a large kitchen, but my kitchen is a small one.
5. My servant, Julia, is a good servant, and she cooks a good dinner.

Reading Lesson

1. In villā sunt statuæ.
2. Statuæ sunt multæ.
3. Statuæ sunt marmoreæ.
4. Mēnsæ et sellæ et lectīculæ sunt in villā.
5. Aliæ mēnsæ sunt marmoreæ, sed aliæ sunt citreæ.

Vocabulary

NOUNS	ADJECTIVES
statua, statue.	multa, many.
mensa, table.	aliæ, aliæ, some, others.
sella, chair.	marmorea, marble.
lecticula, small bed.	citrea, citrus-wood.
ADVERB	
maxime.	

Points to be Made

General review.

Eighth Grade

Nott William Flint

History

The class will trace the history of Illinois, beginning with the present time and working backward. In studying the industries of Illinois the differences between rural and city life and the modern tendency toward urban life will be dwelt on. In considering farm life, and the topography of the state, Nature Study and geography will correlate with and reinforce the History. The comparison of areas and questions of population will yield many problems for number work.

1. Topography: (Outline topography of Illinois in sand.) *a*. Area: Comparison of Illinois with European countries. *b*. Character of soil; rivers; slope of land; climate; rainfall.

2. Industries: *a*. Agriculture: Corn and other cereals; fruits; vegetables.

3. Commerce: *a*. Railroads: Names and miles of railroads. History of railroads in Illinois. (See railroad map.) Original state roads. *b*. Canals. *c*. Lake shipping: Chicago as a port. *d*. Manufactures: City life vs. rural life.

4. Cities of Illinois: Growth of cities and urban life. Study of conditions which make cities.

5. People: *a*. Present population? Composed of what? (Census 1900.) Population in cities and in rural districts. (See United States Census statistics.) *b*. Population in each census year? *c*. Social customs; farm life in Illinois. *d*. Lines of immigration: Early settlers; Indians; Tribal divisions of Algonquins; Whites vs. Indians; Civilization vs. Savagery.

6. Education: State system; State University; State Normal schools; District schools; Denominational and private schools; city system.

7. Government: Present State government. *a*. Legislative. (Pupils will organize themselves into a Senate and House.) Method of choosing representatives. *b*. Executive. *c*. Judicial. *d*. Limitations upon State government. *e*. State taxation. *f*. Illinois in Civil War; Lincoln and Douglas. *g*. Territorial government prior to 1818. *h*. Illinois under Virginia. *i*. Comparison of State government system with municipal.

References: Moses, *History of Illinois;* Kirkland, *History of Illinois;* McKinney, *Indian Tribes;* Patterson, *Early Society in Southern Illinois; United States Census for all years.*

Geography

Continuing the work of October—rivers of the world—the class will, in November, study the Mississippi, and, to relate the work to the history for this month, the valleys of the Illinois and Wabash. Computations of the volume of water flowing down these rivers and of their corrasive power will furnish problems in number work. The making of relief maps of Illinois and Indiana and the modeling of them in sand will furnish hand-work.

1. The Mississippi: (Model of valley in sand; also chalk model in class-room); length. Volume. Rate of flow. Flood plain. Ox-bows. Formation of delta.

2. The Illinois and its tributaries: A geog-

raphy of Illinois. Boundaries and extent. Slope of land. Elevation. Lakes. Character of soil. Minerals: coal, lead, zinc, limestone and sandstone. Climatic ranges. Rainfall.

3. The Wabash and its tributaries. (Model of the valley of the Wabash in sand.) Comparison of Whitewater and Kankakee rivers. Geography of Indiana. Same as for Illinois.

References

Chas. R. Dryer, *Geography of Indiana; Johnston's Universal Cyclopedia;* Alex. Frye, *Geography; International Geography.*

Nature Study

Last month the class studied the distribution of seeds by nature; for November the subject will be the distribution and transportation of seeds by man, and the chemistry of decay. In comparing the extent of food-producing areas, and the cost of crops, in calculating cost of transportation, in finding the cost of preparation of food, the subject will yield many problems in number work. Also in connection with the study of crops the pupils will be encouraged to work out and formulate Ricardo's theory of rent. For hand-work the pupils will make various insect boxes and seed cards, and also perform experiments. For other manual training, see Manual Training Outline, p. 217.

I. Crop Areas.

After studying climatic conditions and the localities from which the different crops are harvested, the pupils will make crop maps of the different countries of the world. In these maps the conditions which make each district suitable for certain crops will be indicated.

1. Harvesting: Methods and reasons for harvesting the different food products. Special study of wheat. Comparison of old and new methods: the method of harvesting wheat on a California farm vs. the method of harvesting hemp in the Philippines.

2. Transportation: (*a*) Wagons; (*b*) Canal boats; (*c*) Railroads; (*b*) Ships.

II. Chemistry of Decay:

The class will study this subject by experimentation. So far as possible each pupil will experiment with a different material from his neighbor's.

1. Effect of heat, cold, and water as agents of decay.

For experiments see Jackman's *Nature Study.*

References

Jackman, *Nature Study and Related Subjects;* Jackman, *Nature Study for Grammar Grades;* Chisholm, *Handbook of Commercial Geography; Album of Agricultural Graphics;* W. K. and A. J. Johnston, *Atlas.*

Music: *Harvest* (hymn), Songs of Life and Nature, p. 186; *Snowy Day,* Modern Music Series, Third Book, p. 174; *Nutting Song,* Modern Music Series, Second Book, p. 162; *He Prayeth Best* (two parts), p. 32; *We Merry Minstrels* (three-part round), p. 15, Modern Music Series, Third Book.

Morning Exercises

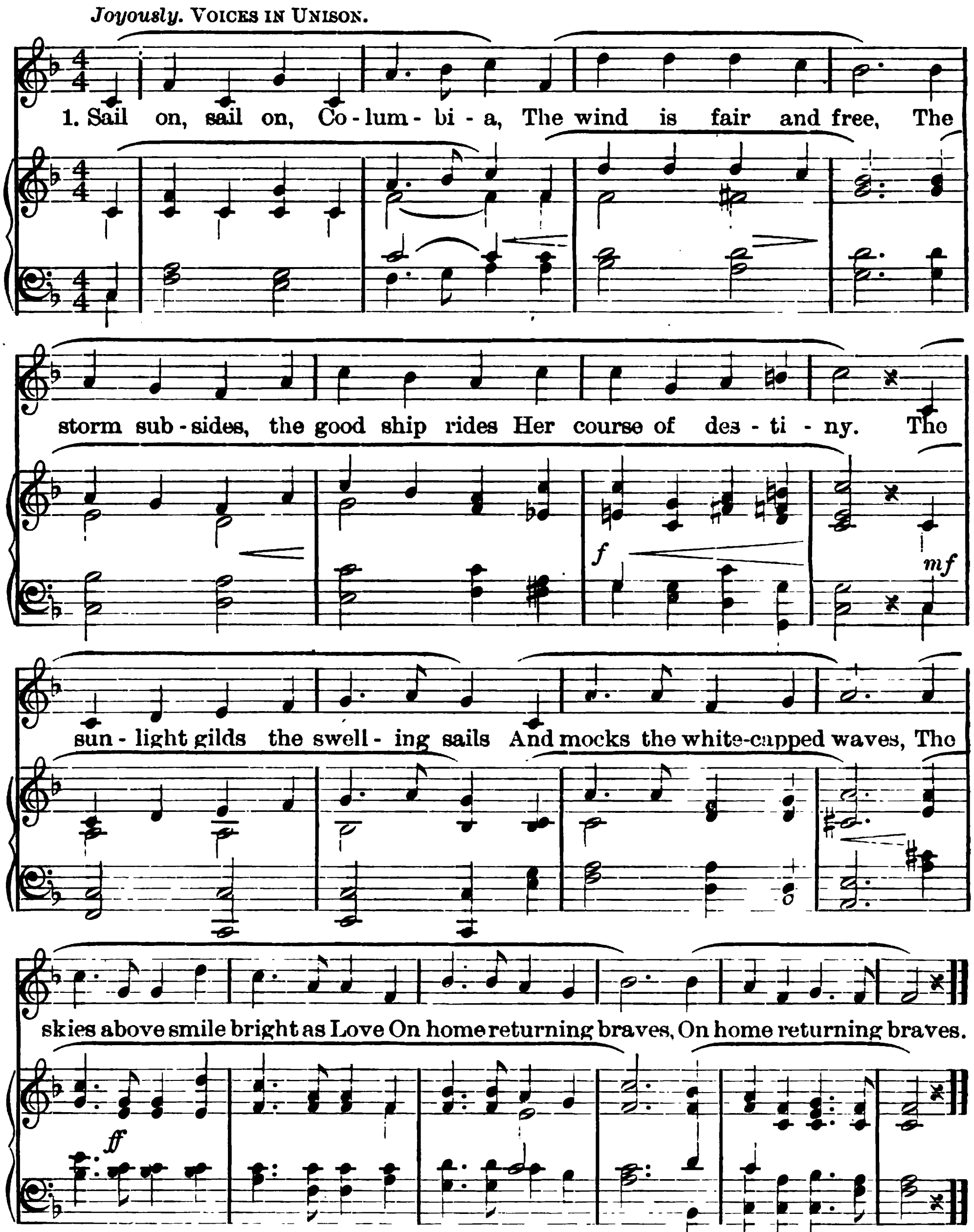
OCTOBER.	SUBJECT.	LEADER.
30.	Art	Mr. Duncan.
31.	Halloween	Miss Cooke.
NOVEMBER.		
1.	Speech	Miss Fleming.
2.	November	Miss Chmplin.
6.	Goethe and the English Literature	Dr. Benignus.
7.	A Trip to Stony Island	Mr. Bass.
8.	Current Literature	Mr. Gould.
9.	Science Observations	Mr. Jackman.
13.	The November Meteors	Mr. G. W. Myers.
14.	Book-binding	Miss Warren.
15.	Books	Mrs. Marion Foster Washburne.
16.	Myths and Stories	Gudrun Thorne-Thompsen.
20.	Result of Field Trips	Mr. Atwood.
21.	Children of Italy	Miss Payne.
22.	The Pilgrims in America	Miss Crawford.
23.	Science Observations	Mr. Carmen.

Historical Events and Birthdays

November	1	Lydia Huntley Sigourney	1791
"	3	Wm. Cullen Bryant	1794
"	5	Guy Fawkes' Day	
"	6	John Bright	1811
"	9	Oliver Goldsmith	1728
"	10	Friedrich Schiller	1759
"	14	Sir Chas. Lyell	1797
"	15	Wm. Pitt	1708
"	15	Wm. Cowper	1731
"	15	Sir Wm. Herschel	1738
"	15	Articles of Confederation Adopted	1777
"	18	Robin Hood's Day	
"	19	Jay's Treaty	1794
"	19	Thorwaldsen	1770
"	24	Grace Darling	1815
"	29	Sir Philip Sidney	1554
"	30	Jonathan Swift	1667

SAIL ON, SAIL ON, COLUMBIA!

William E. Anderson. Mrs. Crosby Adams.


Joyously. Voices in Unison.
1. Sail on, sail on, Co - lum - bi - a, The wind is fair and free, The
storm sub - sides, the good ship rides Her course of des - ti - ny. The
sun - light gilds the swell - ing sails And mocks the white-capped waves, The
skies above smile bright as Love On home returning braves, On home returning braves.
f
mf
ff

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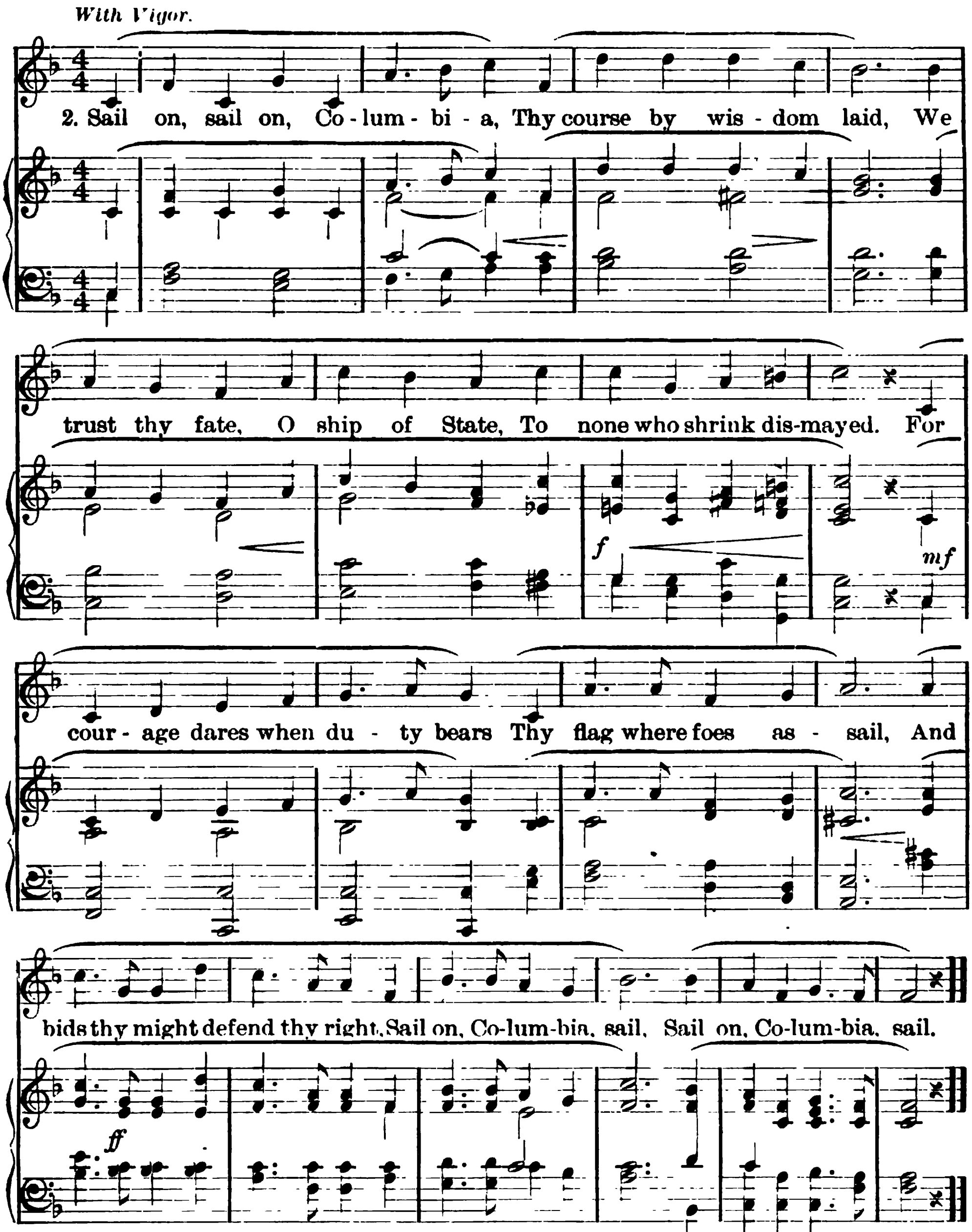

With Vigor.
2. Sail on, sail on, Co - lum - bi - a, Thy course by wis - dom laid, We
trust thy fate, O ship of State, To none who shrink dis-mayed. For
cour - age dares when du - ty bears Thy flag where foes as - sail, And
bids thy might defend thy right, Sail on, Co-lum-bia, sail, Sail on, Co-lum-bia, sail.
f
mf
ff

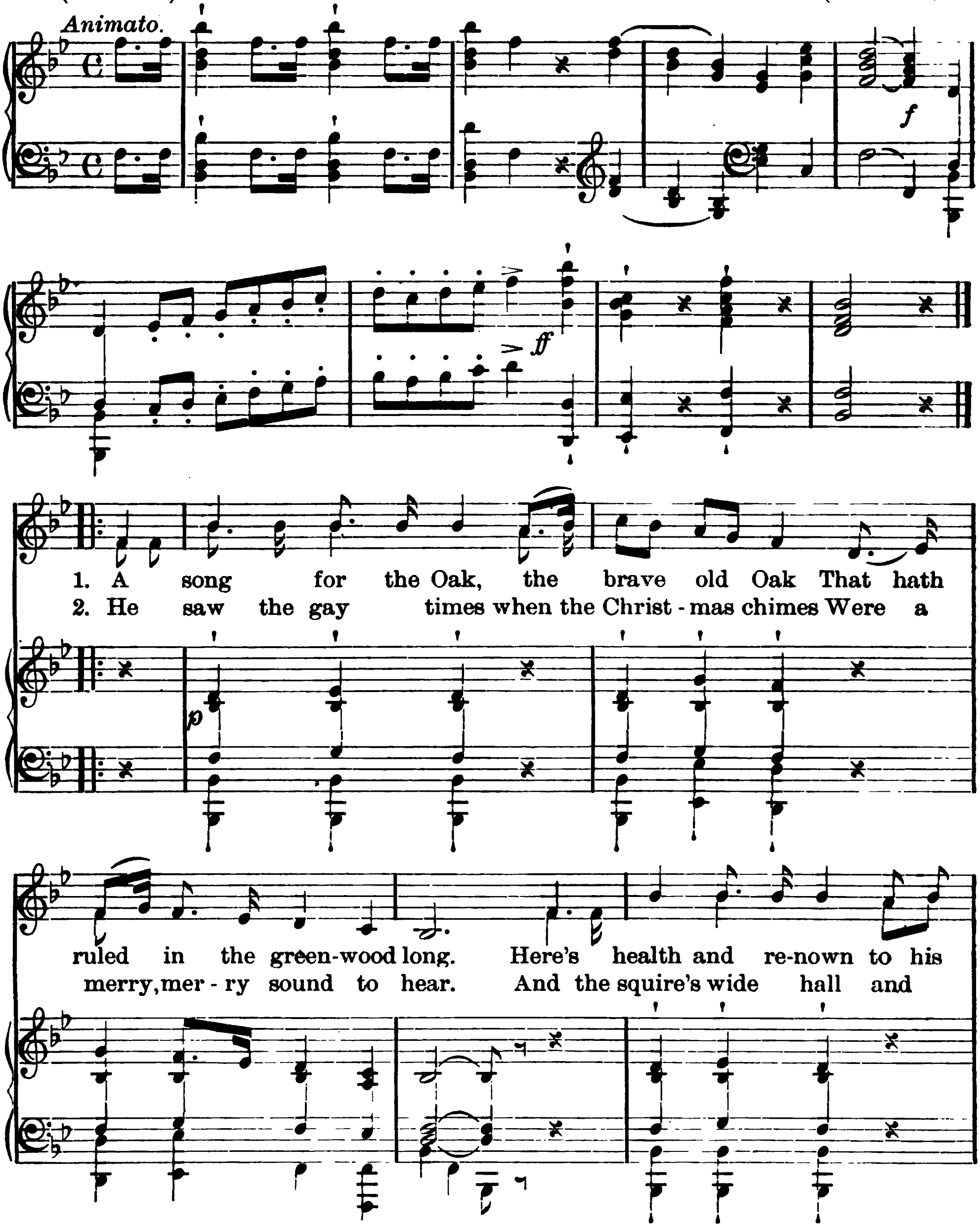
3 Sail on, sail on, Columbia;
All lands shall welcome thee;
Thy flag unfurled to all the world,
Brings hope of Liberty.

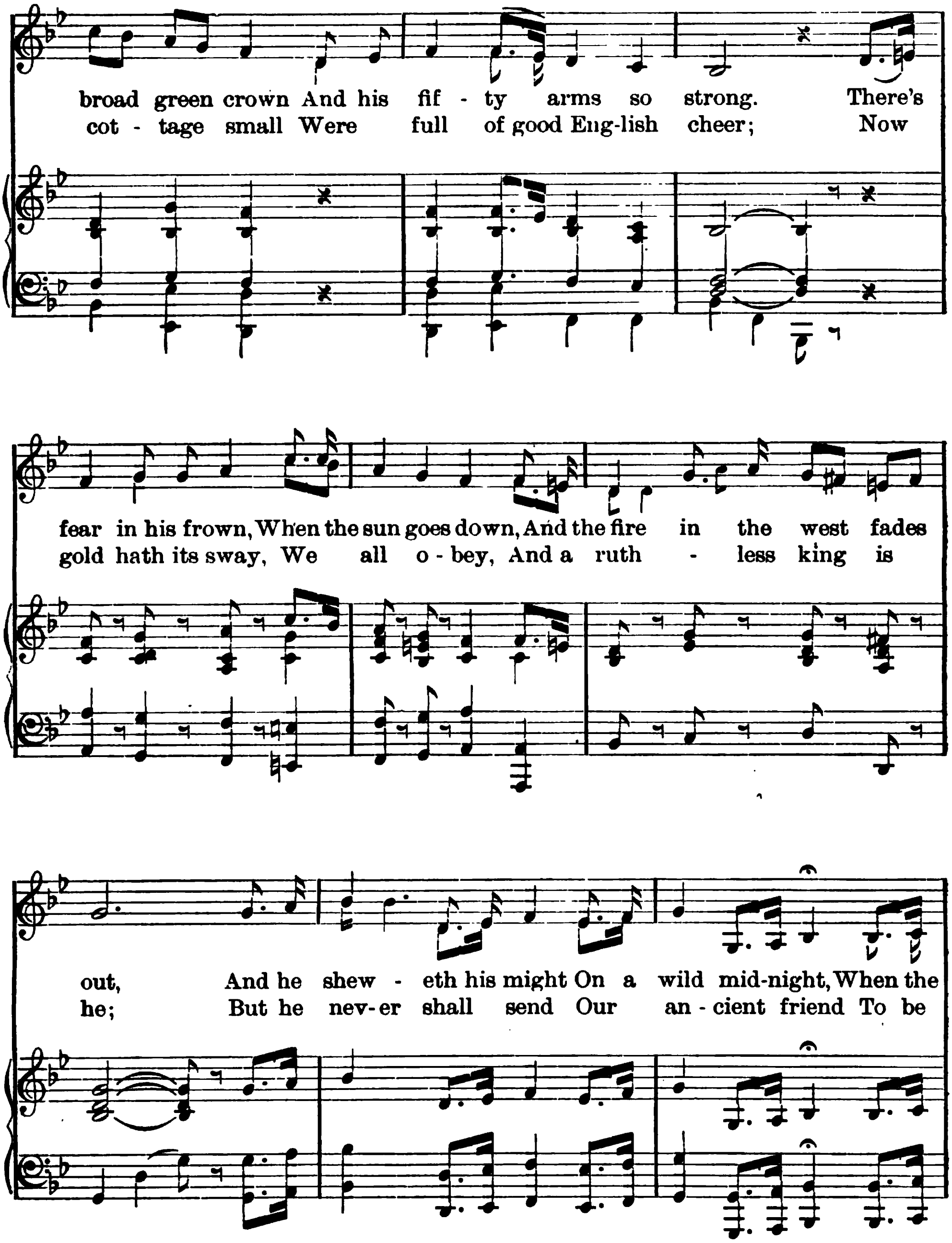
And may the God of Nations hold
Thee safe when storms prevail;
And keep the lights which guide thee right,
Sail on, Columbia, sail.

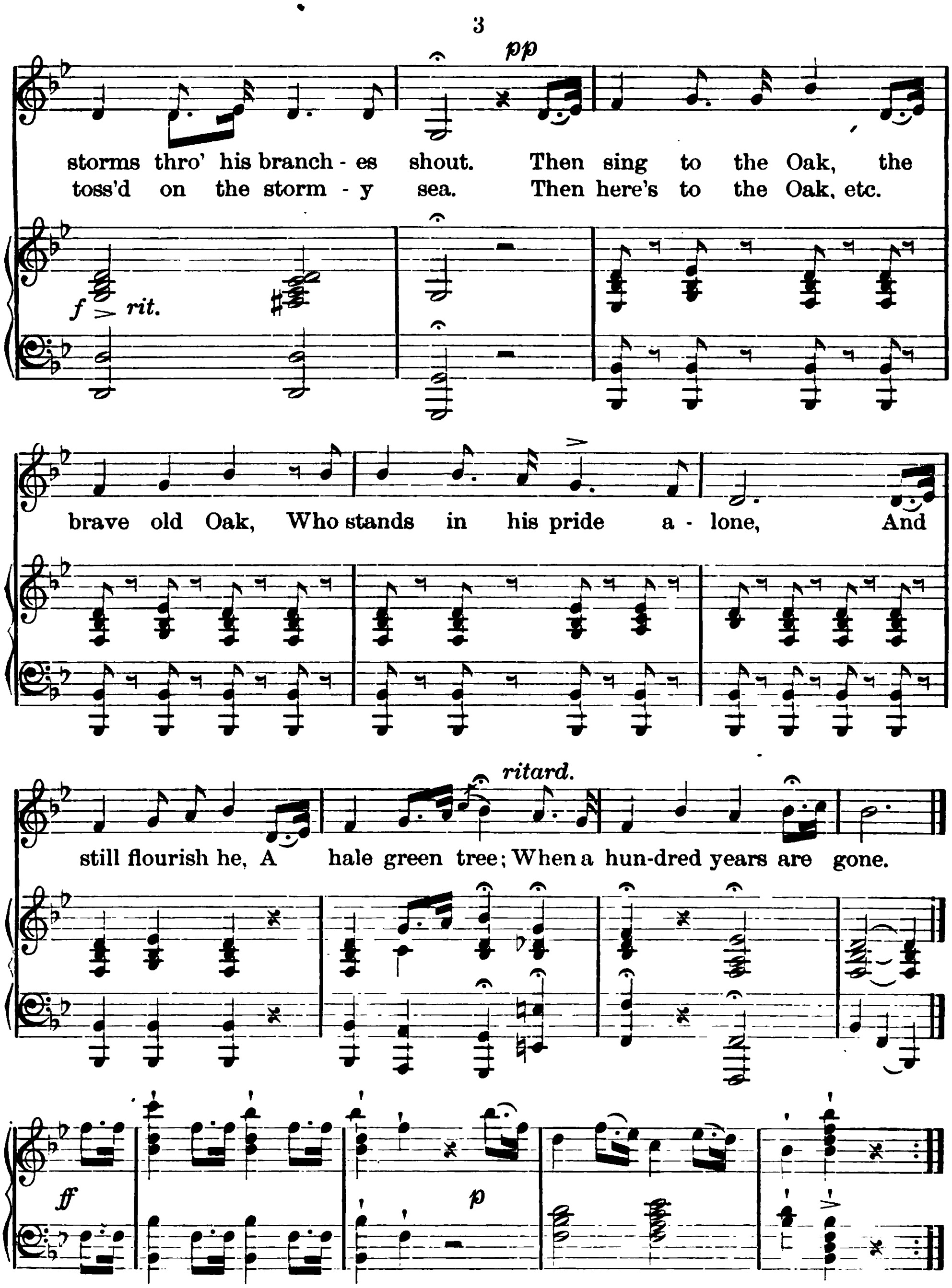
THE BRAVE OLD OAK.

H. F. CHORLEY.
(1808-1872.)

E. J. LODER.
(1813-1865.)


Animato.
f
ff
p
1. A song for the Oak, the brave old Oak That hath ruled in the green-wood long. Here's health and re-nown to his
2. He saw the gay times when the Christ - mas chimes Were a merry, mer - ry sound to hear. And the squire's wide hall and


broad green crown And his fif - ty arms so strong. There's
cot - tage small Were full of good Eng-lish cheer; Now
fear in his frown, When the sun goes down, And the fire in the west fades
gold hath its sway, We all o - bey, And a ruth - less king is
out, And he shew - eth his might On a wild mid-night, When the
he; But he nev-er shall send Our an - cient friend To be


3
pp
storms thro' his branch - es shout. Then sing to the Oak, the
toss'd on the storm - y sea. Then here's to the Oak, etc.
f
rit.
brave old Oak, Who stands in his pride a - lone, And
ritard.
still flourish he, A hale green tree; When a hun-dred years are gone.
ff
p

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COOKE'S Nature Myths and Stories for Little Children.

ATWOOD (In collaboration with Prof. Rollin D. Salisbury) The Geography of the Region About Devil's Lake and the Dalles of the Wisconsin, with Some Notes on its Surface Geology.
ATWOOD (In collaboration with Prof. Rollin D. Salisbury) Drift Phenomena of the Devil's Lake Region—Journal of Geology, 1897.

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THE COURSE OF STUDY

A PUBLICATION FOR TEACHERS AND PARENTS

ISSUED MONTHLY—TEN NUMBERS A YEAR.

Technical Art.

John Duncan.

The word art has a very peculiar meaning to us to-day. There is something occult in the sound. It means something very expensive and out of the ordinary: for the most part oil paintings with gorgeous gold frames. The artists combine to keep up the mystery, and look upon themselves as especially sacred personages, inspired from above. In no other profession does so much self-approbation accompany the same amount of skill. Every painter of the most moderate accomplishment is a "genius." Then come the people who are not artists, but are artistic. They, too, though not quite so swollen with spiritual pride as the artists, are very superior persons, very haughty and exclusive. And last come the mere rank and file, common people, who are either very humble about themselves in their lost condition, or rank Philistines, who rather pride themselves upon their indifference to art questions.

Now this distinction between things that are artistic and things that are not artistic is largely an arbitrary one, as I shall attempt to show. The distinction between artistic people and Philistines is more imaginary than real. Many people who flatter themselves that they are artistic are merely canting Philistines, and many who fancy themselves unresponsive to art are only unresponsive to bad art, and have not had opportunity of appreciating the good. It is more a question of degree than a difference in kind. The ideal is low enough, alas, in some cases—mere straightness it may be, and smoothness, degraded and uniform color, or poor, mottled color. But nobody tries to ignore the æsthetic side of life altogether. Go into the most inartistic house and you will see evidences everywhere of taste of a kind—bad taste, to be sure, but still taste; there are indications that things have been chosen with an eye to something beyond mere utility. The walls are calcimined with color, or papered with an ornamental design. Stove and chair, table, rug, and china, all have their chosen shapes and colors. There are even adjuncts which are merely decorative: pictures, for example, or vases, or mirrors not intended for use but for effect.

Many artists, on the other hand, who paint beautiful pictures are content to live in ugly and vulgar homes. They do not apply the principles that govern their art to the little world about them. Their art stops short within the limits of their picture frames.

But let us consider for a moment the houses of the people who pride themselves on their taste in furnishings, and what do we find there? Too often a medley of ill-assorted things: a Persian carpet here and a Chinese embroidery there, a little Hindoo metal work and a few Japanese things scattered about. The house, in short, is a museum of entirely incongruous objects. The owner is satisfied if the general tone of color is agreeable, and does not seek any further unity or fitness in his furnishings. We cannot look upon ourselves as civilized in this matter until all these queer things are housed in museums and we have developed a style of our own—till all our belongings have a definite function in our lives and fulfill that function, and all this litter is swept aside. A true order is the first condition of the beautiful. Any so-called beauty that comes from disorder, "quaintness," as it is called, is a beauty of a low kind. The first thing to do in making a house or a school or a garden beautiful is to tidy it up. In God's world there may be a place for what we, not comprehending the whole scheme, would call disorder, but in man's world there is no place for it. The forest may be picturesque in this sense, but our houses must not be. Apparent harmony must dominate everything there.

To test whether a thing is artistic or not we must ask these questions: Does it fulfill its function? Has it appropriate and pleasing shape and color? Stools that are of no use to sit upon or put one's feet upon; vases that do not hold flowers; chairs whose carving hurts the back; drawer handles that are too ornate to be pleasant to the grasp, are all in bad taste. Ceilings painted with landscapes and fruit are decorated inappropriately. The tiles around the gas stove in the room I occupy are ornamented with a realistic grape vine. The design is not altogether bad, but one feels that it is an uncomfortable place for the plant.

The best of our carpets are imitations of oriental designs, the best of our buildings little modified copies of Greek and Gothic originals. All the peoples of the past had an art of their own which expressed their peculiar aspirations and fitted their particular lives; we decorate our homes with their tools and weapons, with objects that served their commonest needs and which have no true place in our economy. We are satisfied with their leavings when our own furniture and domestic tools should be sufficient for our æsthetic as well as utilitarian ends. Our designers scramble for the scraps that fall from their richly furnished table. We are like the crow of the fable, decking ourselves with shed peacock plumes and congratulating ourselves mightily upon our fine appearance.

The early Christians were so poor that they could not afford to cut the stones to build new churches for themselves, and were compelled to fall back upon the ruined temples for material; they patched together sanctuaries from these fragments of classic art. We are not poor in the same sense; we can afford to get new stones and to cut them; we are only poor in soul. We inhabit Greek or Byzantine or Gothic houses instead of making for ourselves American houses. We remain strangers in our own homes.

The causes of this state of affairs lie deep and are bound up with many other questions besides the merely artistic one. In mediæval times the workman was free to express his own ideas in his work, subordinating them, of course, to a general scheme, yet happy in contributing his share of spiritual as well as material significance to the whole. To-day we have an aristocracy of artistic talent, the architects and designers, and a slave population of artistic nonentities, who merely carry out their behests. The problem of technical art education is to give these proletaires the franchise of art.

We must use machinery, Morris and Ruskin notwithstanding. The way of progress lies through the factory, slough of despond though it be, and only faint hearts turn back. We must struggle through, like Christian, to the farther side. Mechanical improvement means that the necessary work of the world will occupy less of our time, and give us leisure for the finer part of life. A machine is, after all, only a tool. As yet the tools are cumbrous, and we are hampered by them, and obtain poor results. By and by we may hope for better things. We owe much already to photography, for example, and all the processes of mechanical reproduction bound up with it.

Our system of æsthetics must undergo a change. When the principle of the arch came in, the Romans disguised it behind a false architrave. The old ideas in art died slowly. Roman architecture simulated Greek for centuries. It was only in Byzantium that the arch was completely recognized as beautiful as well as useful, and was frankly exposed in their finest architectural works. Later, with the Gothic builders, a ruder and stronger broken arch took the place of the round one, and by and by it was in turn recognized and consecrated to artistic uses, and in the artists' hands became a lovelier thing yet than any former device for the spanning of the wall opening.

The girder has exactly the same history. It was first disguised behind stone masonry, and is now openly confessed only by the most intelligent architects, who are wresting from it possibilities for new beauty.

When printing was introduced it imitated manuscript and only little by little asserted its own characteristics. Engraving at first imitated pen drawing, and etching in turn imitated engraving. So with color printing; the first chromos mimicked oil painting, even to the texture of the canvas and the brush marks. Woven fabrics copied hand-sewed tapestries and embroideries, and so on, and so on.

In this way the machine has got a bad name and deserves it, deserves it as the Roman arch deserved it, and the Gothic arch, and the girder. But once let the machine frankly declare itself, and let the craftsmen be educated to use it properly, and we shall have new arts which are not imitations of anything else, but must be judged upon their own merits.

Throughout Europe there are signs of awakening interest in decorative art, technical art, industrial art, arts and crafts, call it what you will. Let me block out the history of art in the roughest way. You know that Europe and Asia have each had a sharply marked off art history of their own. Asia has all along devoted herself to ornament, design, pattern making, a subjective art springing straight from and expressing the soul, and in no wise concerned with the representation of things; whereas Europe has been objective, her eyes directed outward and her art literary and narrative. It has been representative of objects and events; story-telling has been its business, story-telling from the anecdote to the most dignified presentation of history. Think of the art of Italy and France, of Germany and England.

In modern times another art has grown up within this literary art. The mind of Europe has become scientific in the last two hundred years. So we have a scientific art—that of the naturalists, of whom Zola is perhaps the type in literature, and Bastien Lepage in painting—holding a mirror up to nature and reflecting her image without prejudice. Impressionism is only a development of naturalism, the naturalist mainly occupying himself with the surfaces and texture of things, and the impressionist with their appearances as affected by light and air, the one being as truly scientific as the other, and in the same meaning of the word. (I must be understood as speaking of painting and sculpture, for Europe has had, of course, purely subjective arts in her early architecture and her modern music.)

And now in these latter days a strange thing has come to pass. Europe has become intensly interested in this purely æsthetic art of the East, the art of rhythms and tones and colors. Pure beauty is asserting its claims, and pushing the representation of things aside. We have painters who think that fine colors make fine pictures, even to the exclusion of almost everything else. Art for art's sake is the cry. Whistler discovered Japan and sat at the feet of the Japanese masters. Their art, he tells us, is a matter of the juxtaposition of tints—"arrangements" he calls his pictures built on Japanese models. All the tide of art sets in this direction. The Scottish painters, Lavery, Walton, Guthry, are carried along. Hornel and Henry set out for Japan, other Scottish and English artists to Constantinople and Egypt and Morocco, and they bring their Turkey-carpet pictures back with them to the exhibitions. The Americans are going the same way. Color, quality, tone—these are the watchwords, the touchstones by which all art must be judged and ranked.

Now together with this new school of picture painting the arts and crafts have been growing up. When Whistler was studying Japanese prints, Morris was busy with Persian embroideries. Morris made the discovery that our surroundings were sordid and ugly, and at the same time became dissatisfied with the art of the studio, which has no outlet into life. To make "arrangements" bound within a narrow frame did not seem to him to be enough. He wanted to "arrange" all our environment—to make the home, the city, beautiful—to transfuse all life with beauty. Whistler on the contrary was content to enjoy the dainty gardens of Japan, its silks, its richly carved and lacquered wood, its strange temples, its dances, and its festivals, without making any serious attempt at translating them into the terms of western life and applying them to the uses of the western world.

Morris opened workshops for the production of furniture, printing, stained glass, textiles, tapestries, and embroideries. He promoted the formation of the Art Workers' Guild, which in its turn gave birth to the Arts and Crafts Exhibition Society, and so the movement grew, spreading ever wider and wider.

After a long period of historical and realistic art, in which Nature has beheld her very form and feature, and man has pictured himself in every act of his complex material life through the centuries, we have in the last thirty years witnessed a great revival of æstheticism that has not yet reached its full growth but still promises immense developments. Of this movement the "art for art's sake" men are one part, and the arts and crafts men the other. The first is of the aristocratic type, and is for the few. The second is democratic, and is for all.

Fine art is for the wealthy only — the furniture of palaces at which the common people were allowed only to peep. Since mediæval times it has never spoken directly to the masses of the people. Applied art is for all, and finds its way everywhere.

How vain it is to hang pictures upon our walls if we do not attempt to make our own lives worthy subjects for pictures! We do not want our children to be mere connoisseurs and dilettanti, little prigs lisping the names of Botticelli and Cimabue, but actors and doers, world shapers, architects of cities and gardeners of the fields. A living art must better real conditions and be a direct force in the work-a-day world. The adoration of the masterpiece, of the Venus di Milo and Sistine Madonna is in most cases fetichism, a worship of stocks and stones, while all the time the neglected Spirit of

Art is whispering in our ears as the Muse did to the Poet, "'Foole,' sayde my Muse to me, 'look in thy heart and write.'" "The soul is progressive, and in every act attempts," as Emerson has expressed it, "the production of a new and fairer whole. The artist must employ the symbols in use in his day and nation to convey his enlarged sense to his fellow-men. True art is never fixed, but always flowing." On the stream of art the wave rises high, in a Parthenon, and passes on. "Beauty," he continues, "will not repeat in America its history in Greece. It will come as always, unannounced, and spring up between the feet of brave and earnest men. It is in vain that we look for genius to reiterate its miracles in the old arts; it is its instinct to find beauty and holiness in new and necessary facts, in the field and roadside, in the shop and mill."

"The artist need not cumber himself with the conventional nature and culture, nor ask what is the mode in Rome or in Paris, but that house and weather, and manner of living which poverty and the fate of birth have made at once so odious and so dear, in the log hut of the backwoods, or in the narrow lodging where he has endured the constraints and seeming of a city poverty, will serve as well as any other condition as the symbol of a thought which pours itself indifferently through all."

The change from one type of art to the other is tremendous. It involves a complete change of front; from the negative to the positive pole; from the merely contemplative and critical attitude to the active and constructive. The one art only reflects life — the other shapes and makes it. What this means for the happiness of all I leave you to imagine. Art must be judged in terms of its usefulness to the community. It must not be a thing apart, but must identify itself with actualities, and fit our material lives as closely as soul fits body, so that we have no movement of one that does not involve a corresponding movement of the other. We must fuse art and life together, "that soul and sense may make one music as before."

This is the hope of the Arts and Crafts movement, the inspiring thought at the core of it, to touch the dullest realities with a gleam of the ideal, to transmute the matter-of-fact into poesy with a real alchemy, bringing back ordered beauty to our disordered and darkened lives. New ideas are transforming education. The little inert listeners are becoming self-active willful beings. They are no longer considered as wine skins, to hold the precious liquor of knowledge, but as coworkers with the teachers toward definite, practical ends. Handwork, sloyd, is an established fact in the schools; design is coming in.

Art, as a thing by itself, is a sickly, enclosed hothouse plant. Industry, on the other hand, without art, is barbarous. What is design without manual training? What is manual training without design? Neither can do without the other. Let us bring them together (they are already almost at the point of contact), and the problem is solved.

Design is coming into the common schools. Let it come intelligently. We shall have, if we do not look to it, the tiresome copying of outworn forms instead of appreciation of the spirit—historic ornament without an understanding of the causes behind that shaped it. The students will be taught that there are only five orders of architecture instead of the five thousand that are possible. I spoke of the workman as a slave to the architect, but the architect himself is often a slave to a superannuated convention. His buildings are anachronisms.

Design is already being taught in the schools—design, you will hardly believe it, without reference to its application. Can you imagine anything more fatuous than ornament that does not ornament anything? I heard of a school the other day in which this was being done. The teacher tried to enlist my sympathy, and complained that the boys could not be induced to take any real interest in ornamental design. They called it "fancy work." I think they named it rightly. The student can but follow the will-o'-the-wisp wanderings of a vagrant fancy—he has no other guide. The more sensible refuse such a mad leader; some may be hoodwinked for a time till they are tired out; nobody but a lunatic could go on to the end. The teacher in question claimed that the making of patterns developed in the boy a sense of relation and proportion. Relation to what? Proportion to what? To itself. But it has no self to start with—the beginning must be arbitrary; there is no reason for the choice of the first proportion; there is no center of relation—and after the beginning has been made the next step must be arbitrary too. Suppose we have made an outline—laid out a space—why should we divide it into five parts instead of three or seven? It is arbitrary—it is "fancy work," and so not worth doing.

Suppose on the other hand we have something to decorate. It must be something that is incomplete, that calls for decoration, either to mask some ugliness, or, it may be, only some shortcoming in the thing. In the one case it is a corrective measure, a patch; in the other it is the completion of a projected idea. No room for fancy here yet. The situation dominates the work and asks for a definite treatment; the circumstances condition the work. We have to deal with a room? Then we must consider the habits of the inmates, the function of the room, its size, proportion, and lighting. The more the circumstances condition the work the higher rank the work takes. The more space left for fancy to play about in, the lower the work ranks. Fancy is a little devilkin that dances in an empty brainpan; whenever any real work is to be done the angel Imagination drives the imp away.

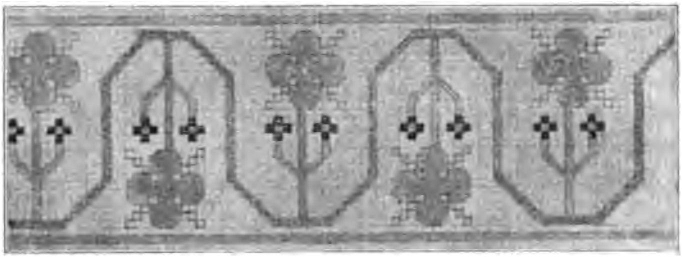
Instead of making patterns without reference to anything beyond, we must begin in the schools with the things that are about us. We must do the things that we are already doing daily—only more beautifully, and that will be art—true art. There is no reason in the world why a map should not be as beautiful as a Japanese print—I have seen some indeed that were. Charts and diagrams even can be treated in an artistic way—the lines laid out as beautifully as may be, and the colors selected with judgment and taste. Then there are mottoes and texts to be illuminated. You have seen these things badly done and so you may think that you do not like anything of the kind, but do them well and it will be quite another thing. There are presents to be made for parents and friends; there is the school itself to be beautified; everybody might help at that under the supervision of discreet persons, considering the choice of furnishings and planning all kinds of pretty devices for permanent or temporary decorations. Festivals, such as Thanksgiving and Christmas, may be celebrated in royal style.

If in doing this work we think out original and harmonious "arrangements," we shall be inventing new styles all along, styles which the pedants will by and by copy. They will measure off the proportions that we strike happily with a careless but unerring hand, and will impose them upon a slavish people, as they now attempt to impose the proportions of Greek art upon us.

"Give to barrows, trays, and pans
Grace and glimmer of romance;
Bring the moonlight into noon
Hid in gleaming piles of stone;
On the city's pavéd street
Plant gardens lined with lilacs sweet;
Let spouting fountains cool the air,
Singing in the sun-baked square;
Let statue, picture, park, and hall,
Ballad, flag, and festival,
The past restore, the day adorn
And make to-morrow a new morn.
So shall the drudge in dusty frock
Spy behind the city clock
Retinues of airy kings,
Skirts of angels, starry wings,
His fathers shining in bright fables,
His children fed at heavenly tables.
'Tis the privilege of Art
Thus to play its cheerful part,
Man on earth to acclimate
And bend the exile to his fate,
And, moulded of one element
With the days and firmament,
Teach him on these as stairs to climb,
And live on even terms with Time;
Whilst upper life the slender rill
Of human sense doth overfill."

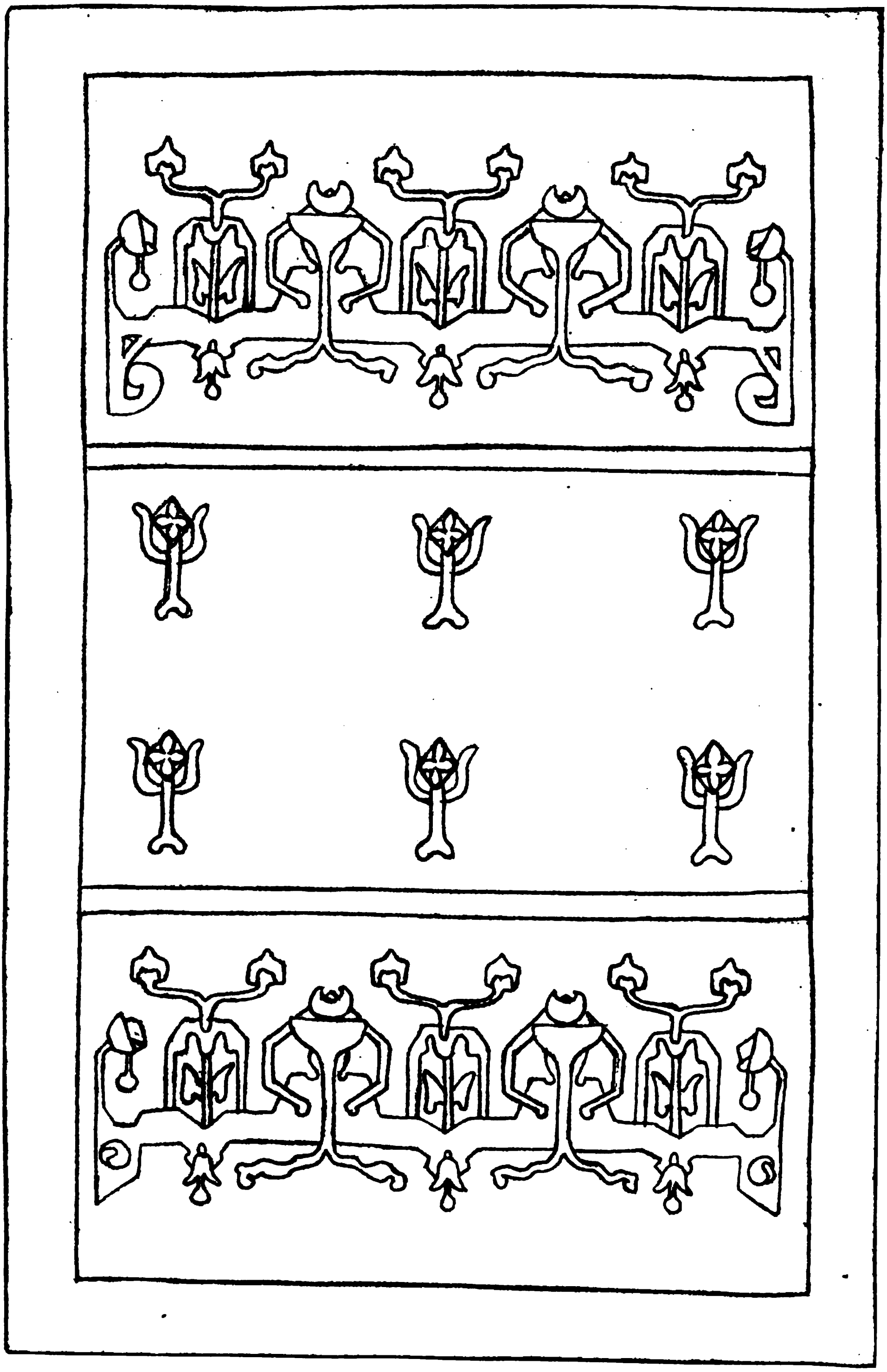
Christmas Work

DIRECTED BY THE ARTS AND CRAFTS COMMITTEE

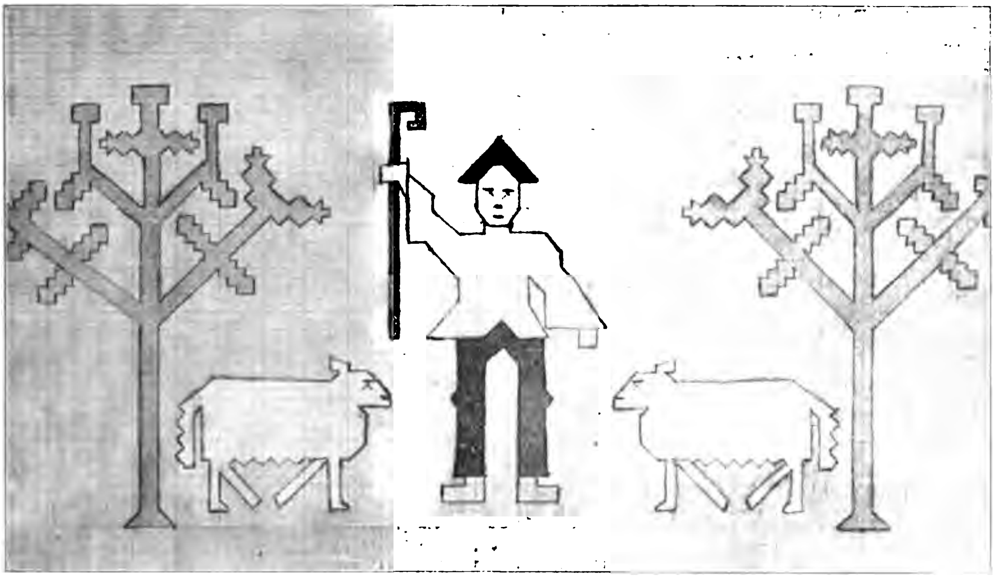


DESIGN FOR BORDER IN OUTLINE AND CROSS-STITCH

During the months of November and December all students of the school unite in preparing for the celebration of Christmas. Every child takes active part in the festival and in all the work it involves. Cooking classes study the preparation of the Christmas feast, different grades doing such part of the work as is possible to them; the literature studied is chiefly that of the Christmas season, and is planned to make more perfect the appreciation and enjoyment of the day; and the work in dramatic reading is the study of that literature with the direct purpose for its recitation in the general celebration. This celebration, which is an elaboration of the daily morning service or chapel, is made as beautiful as possible by recitation of fitting literature, the singing of carols, the telling of the Christmas story, and the giving of presents. As an expression of children of various ages and experiences and as an appeal to all, the program is made to include verses, stories, and songs fitted to the different ages; the presents made, too, show workmanship and taste in all stages of development. Every student in the school makes at least two presents, one of wood and another of metal, clay, or plaster, textile fabrics, paper, or leather. The processes involved in the making are woodwork and carving, iron-bending,



DESIGN FOR PORTIÈRE IN APPLIQUÉ AND EMBROIDERY



DESIGN FOR OUTLINE AND CROSS-STITCH

hammering in brass, modeling, and casting, weaving, embroidery, applique and sewing, simple bookbinding, drawing, and painting. The ideal being that every present given shall be as far as possible an expression of the giver's own taste, skill, and feeling, the children are encouraged to plan their own work and make original designs for construction and decoration. As helps, the teachers suggest articles which they think possible and appropriate, and show models which are to serve as inspiration rather than induce imitation. The hours devoted to manual training on the school program not allowing sufficient time for all the work to be done, special afternoon hours are arranged outside of the regular school sessions when all the students may meet in the workshops and work under the supervision of the teachers in charge.

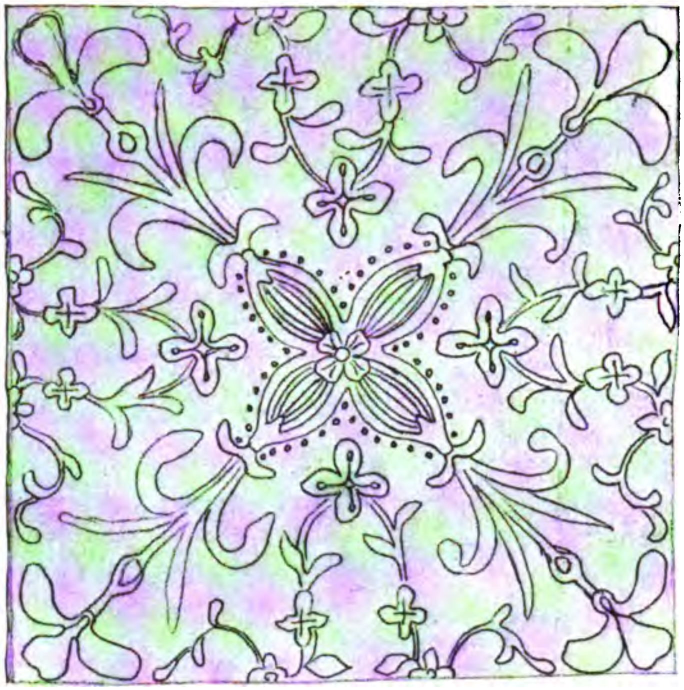
The work planned in textiles will include basket-weaving, beadwork, sewing, embroidery, appliqué, weaving, and crocheting.

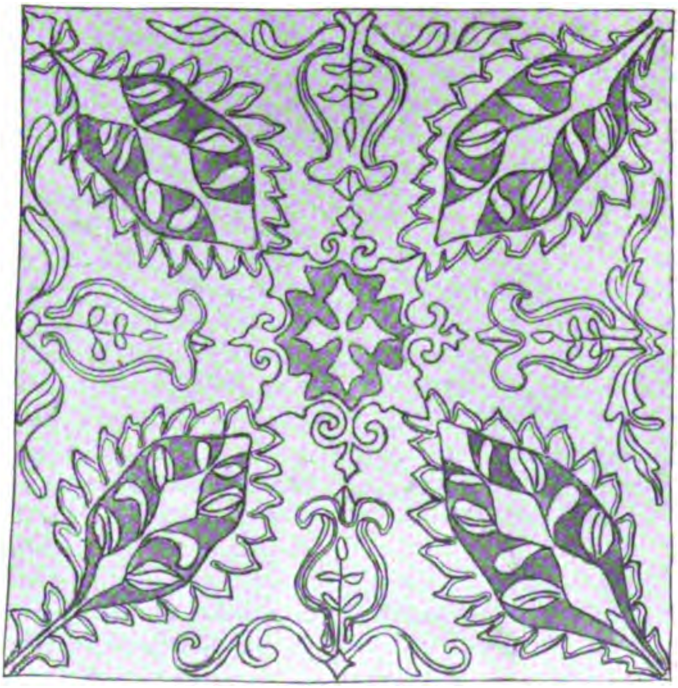
Great variety of design is possible in basket-weaving both as to color arrangement and form. Splits and raffia will be colored with aniline dyes and woven into baskets of all sizes; basket of reeds, uncolored, will be lined to fit their various uses.

Cotton or linen fabrics woven on our handloom will be made into simple hangings, scarfs, and laundry-bags. Covers for cushions and hassocks may be woven of carpet yarn on the frames made for the purpose in the manual-training shop. Little bags, needle-book covers, and cushion covers, may be woven of silk or worsted.

Possibilities of design being limited in this weaving, attempts at design should be confined frankly to stripes or simple geometric forms based on the square and triangle. What is known as the "filling effect" being most easily carried out into this kind of design, the weaving is planned to show only the filling or woof threads; the warp threads being of finer texture and not placed closely together.

Bags, aprons, scarfs, belts, collar or cuff bands, table covers, pillow covers, and





DESIGNS FOR CUSHION COVERS IN APPLIQUÉ AND EMBROIDERY book covers may be made of cottons, linens or silks ornamented with beads, embroidery, stitches, or applique, Cross-sticth, outline and satin stitch, chain and button-hole stitches will be used. Cotton sateens and art linens can be had in all colors and will be readily available.

The making of the banners described by Mr. Duncan in the outline for Art, and by Miss Fleming in the outline on Speech, Oral Reading, and Dramatic Art, will involve the coöperation of many different workmen, designers, draughtsmen, cutters, sewers, and embroiderers working together with common purpose. The banner illustrated in the frontispiece will probably be worked out in silk applique with embroidery; the banners for the procession, in cotton or linen materials. In this work, as in all of the decorative designing, the hope is to utilize as fully as possible all the work of all pupils. With this end in view, many designs will be accepted in whatever state of crudeness, will be carried on to higher stages of perfection by more skillful hands until they have become products worthy of their use. The decorations of the building being in this way the united thought and skill of the students, will truly express the life of the school.

The work in metals will be confined to hammered brass or copper and to bent iron.

Trays of various sorts and sizes and for many purposes; finger plates; panels for boxes and cabinets, and simple candlesticks are the only things proposed in brass or copper. A few possible designs for this work are suggested in the accompanying cuts.

The thinner sheets of brass may be appropriately and artistically used by very young children, who can make effective and good patterns with simplest tools and modeling. The fall studies of fruits and plants may be worked into ornamental designs for plaques and tiles, which can be modeled in clay, cast in plaster, and colored.

The children of the First Grade are modeling the fruits they have collected in their study of the distribution of seeds. These when finished will be used as paper-weights, which the children will present to their friends at Christmas-time.

The Second and Third Grades are illustrating the life of primitive man. They are modeling these illustrations in low relief, and the tiles are cast in plaster and colored. They are sufficiently decorative to be used as gifts.

The Fourth Grade children are recording in clay their observations of seed pods and their function in the distribution of seeds.

The Fifth Grade children have almost completed some illustrations of colonial life, and will model also in the round the animals, domestic or wild, which they are studying.

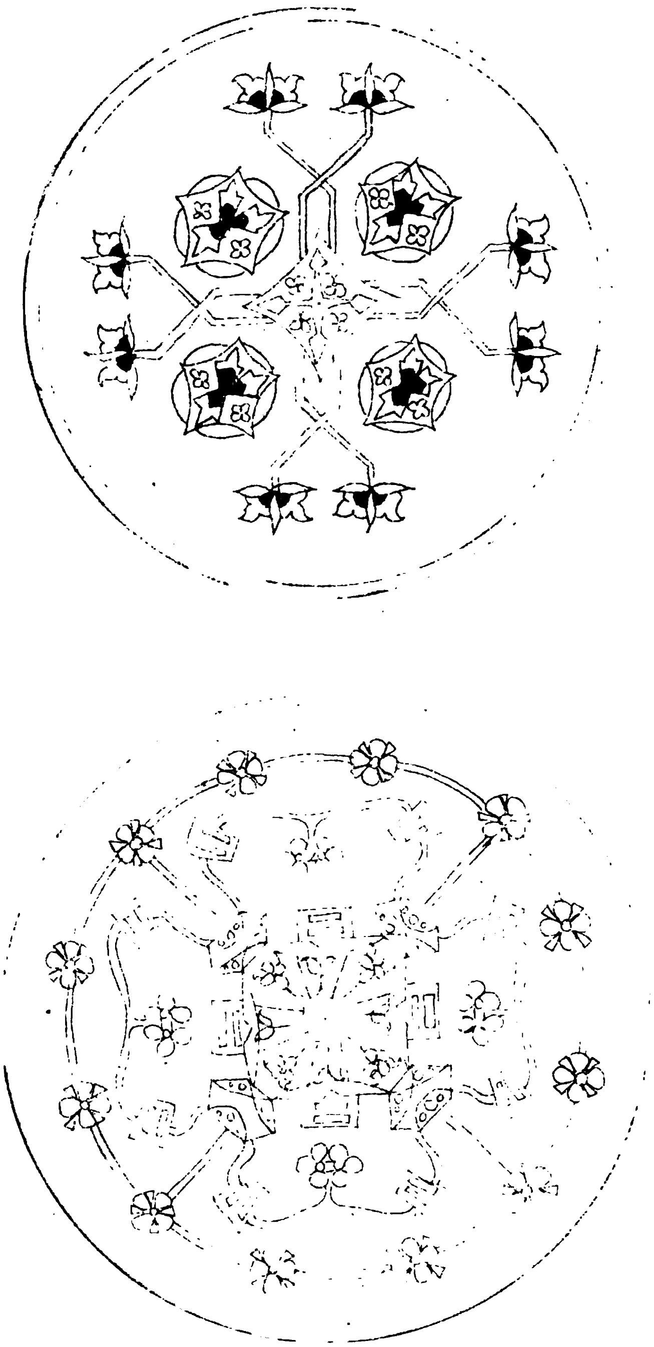
The work of the Sixth, Seventh, and Eighth Grades is to be correlated with the History.

The following is an outline of the Christmas work in binding and illuminating. Students will choose their materials from the collection of samples displayed, and will also select their own sentiments and verses. The Christmas reading list published in this number will aid in the selection of literature.

1. CARDS: Christmas cards and leaflets on heavy vellum and paper with appropriate sentiments and lettering.

2. BOOKLETS: Favorite verses, Christmas poems, and carols lettered on vellum and laced into covers with suitable designs.

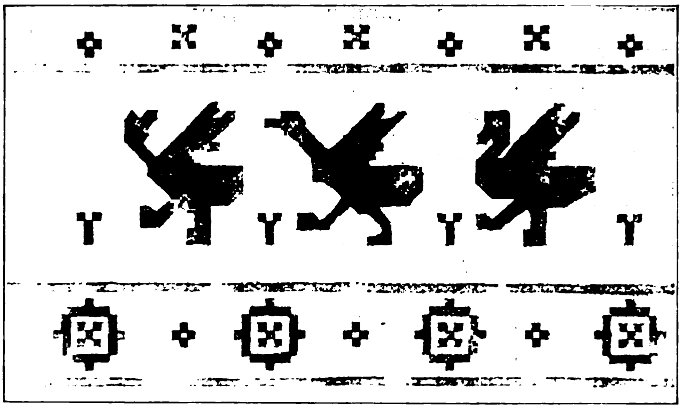
3. BOOKS: Binding of books in the sheets as obtained from the publishers. Covers in vellum folded over bristol-board, or mill-boards covered with paper, or



DESIGNS FOR TRAYS IN HAMMERED COPPER

leather. No gilding will be done. The designs for the leather covers will be burnt in, and all other decorations will be in ink or water-colors.

In this, as in all other work, the utmost encouragement will be given to originality and taste in conception, and freedom of expression.



Psychology

Francis W. Parker

Review of One Month's Teaching

I present first a few facts in elementary psychology:

I

I appeal to memory and find that I can recall a vast number of images; in fact, if I were to write my life history I should depend fundamentally upon remembered images. If I could not recall images I could recall nothing, i. e., I should have no memory. I test this in many ways, and always with the same result.

a. I am conscious of something.

b. That something of which I am conscious is in my consciousness.

c. All things of which I am conscious are in my consciousness.

d. I am conscious of nothing outside of my consciousness.

Is it possible for me to study consciousness?

I see the inkstand. The inkstand is not in my consciousness. Therefore I am not conscious of the inkstand. No part of the inkstand is in my consciousness.

Something is in my consciousness; otherwise I should not be able to see the object.

Which is the more real, the inkstand outside of my consciousness, or that something (image) in my consciousness?

Is it possible for me to study the inkstand?

I conclude instantly that it is possible. I analyze the inkstand. Does not that analysis depend entirely upon that something of which I am conscious?

I describe the object. Does not the description depend fundamentally upon the image of which I am conscious and which I believe corresponds to the inkstand?

Could I describe any object unless I had an image corresponding to it?

Is it possible for me to study that upon which my analysis and description depend?

I believe that I can study the inkstand; I know that my study depends upon the image of which I am conscious. Which is the reality to me, the inkstand outside of my consciousness, or its corresponding image in my consciousness?

Reading is imaging.

Some words arouse images in consciousness, other words assist in arousing images. I know this from repeated tests.

I study a printed description carefully. I am then able to recall a series of related images; I know that the printed words recalled the images. Can I not consider these images as realities? Can I not study them—how they came into consciousness, and what they are in themselves?

I can hold an image in consciousness and afterward tell how the image grew, how other images came in and became one with the image I held.

Studying is holding images in consciousness. I have studied. What images, the result of my study, remain?

II

Teaching consists in presenting conditions for the most economic action of the being in the search of truth.

A narrower definition is: Teaching is the presentation of conditions for the growth of necessary educative images.

All educational growth is by self-activity.

Judging by these statements, I have partially failed in my attempts to teach psychology. This being so, it becomes my duty to ascertain the difficulties that stand in the way of efficient self-activity on the part of each student. With this end in view, I asked the members of the Pedagogic School to state frankly the difficulties they have in investigating the contents of their consciousness. The students are all graduates of high schools (a four-years' course); some are graduates of universities, and more than half are teachers of successful experience. So it may not seem improper to say that they are above the average in intelligence.

The testimony given below proves either that the teaching has been inefficient, or that the subject itself is too difficult.

Students' Testimony

"I find it almost impossible to know what is in my consciousness, or to follow, independently, any direct line of thought. What I mean by the latter is to have a line of thought lead me to a conclusion."

"I can't come to any conclusions after I make an experiment. If I try to make an experiment my mind seems to be aware of it, or self-conscious, so to speak, and then I don't seem to be able to think freely. I suppose it is all because I have done more memory work than reasoning."

"In studying my consciousness I cannot look at all my daily thoughts and experiences as experiments. When I try to experiment with a conscious effort I do not know whether I am doing so naturally or in an artificial way."

"My difficulty is in presenting my thought in an intelligible form. I have, I fear, never thought consecutively, and when I try to work in this new way I try too hard and my mind is a blank."

"I have indefinite 'feelings' along certain lines, but cannot grasp or state them."

"My chief difficulty has been heretofore in trying to think of something great instead of holding an image of something near at hand."

"In beginning the experiments, I think my difficulty was in trying to find something wonderful and extraordinary, instead of taking the common things around me."

"I have been in the habit of getting things from books and of getting things in that definite way, and when I try to study in this other outside way and to think without books I can't do it; I am lost."

"My difficulty is in not having the habit of thinking. I have always accepted statements from text-books."

"My chief difficulty is that I have been always given some definite lesson to learn, and it is difficult for me to realize that I must depend upon myself for everything which I am to get in the study of psychology. I am too dependent upon others and upon books."

"I do not know how to think for myself. I am dependent upon others or upon a book."

"I cannot think for myself; I have memorized a dozen pages, and recited them in class the next day."

"I have never been accustomed to carrying on any observations or investigations for myself independent of text-books, and I feel utterly at a loss. I simply do not know how to make independent experiments with my own consciousness, and have no sort of conception how to start out."

"I have been in the habit of studying from books, and find it exceedingly difficult to study my consciousness. Instead of finding material for my experiments in the common things, I find myself looking for something extraordinary."

"I feel the lack of proper early training. I need more systematic training for concentration of thought."

"My difficulty is a relic of early barbarism. The necessity of getting 'good marks' has made an indelible impression, so that even now, when I know better, I am afraid to say anything unless I am absolutely sure I shall give the 'right answer,' and I am thus hampered in expressing myself. Then, too, my power to think has been lessened by a course of book study and the accepting of ideas of authorities on questions without a personal investigation."

"I am sure it is my desire to be perfectly genuine, but thinking this matter over in the light of our discussion on the recitation, I fear I have been trying to say what I thought would meet with approval. I was willing to give the truth to the class if I was sure it was the truth, but I was not quite willing to make mistakes for their benefit."

"My past experience in study has not been systematic imaging, or holding an image and letting it grow step by step. I am happy to say it is getting lighter and brighter."

"In our former course we sat at our books hour after hour and crammed, and thought that we had learned something, and when we came to the class-room we fancied we knew something; but now I can hardly recall any of the work."

"My images have always been too indistinct. In the text-book work I had more than the image of words, but my images were vague. Now I realize I must be exact, and I cannot be so until my image is clear."

"I am unable to follow along a line of thought. I cannot concentrate my mind for any length of time on any given subject. I am always wandering off at the slightest distraction."

"I find it difficult to concentrate my mind on a certain line of thought. I cannot start on a line of experiments with myself without suggestions from class-work."

"It is hard to follow one line of experiments. My pictures grow so large that they overshadow the principal thought."

"When thinking of a subject and trying to develop the image, my mind wanders to other subjects, which crowd out the first. My images are disconnected and indefinite."

"I am not sure about what experiments I ought to make. I have made experiments, but have not told them in class, because I feared that they were 'fringe' questions and not what was wanted."

"I really do not know what to study. It seems to me that I go round and round the same thing and do not make any progress."

"It seems as though I wander around and have nothing definite to think about. I do not believe I know how to study my images."

"My study up to this time has been directed by teachers who assigned definite, specific work. Most of it was contained in books, and so I have always had the information sought for placed directly before me. Therefore the psychology work is difficult for me to grasp. To study my own consciousness seems rather vague, probably because I have never done it. The field of work seems too broad and indefinite."

"At first I could not see where I was going. I gained something from each recitation; but when I wanted to go on by myself I could not see where to go. Then, too, I wanted to take the whole universe. Recently, in following a train of investigation, a whole flood of light came to me. It all seemed simple, and I learn by keeping my mind quiet and receptive."

"I cannot concentrate my thoughts on the subject long enough. I am not able to go any further with my experiments than we have gone in class; and I do not seem to understand what I should get from the study."

"I do not know how to make experiments that are in line with the class-work. I am observing and thinking all day long, but whenever I have said anything, until to-day I have been told, 'That isn't the question.' Therefore I have kept still, feeling I would not help the class if I were off the subject."

"I do not seem to know what sort of experiments to try, nor what sort of deductions to make after I have tried the experiments. Every time I give a result of my attempts at experimenting I find I am off the subject, so there is no useful deduction possible from the experiments I have tried, because the experiments themselves are at fault. I should like to know what the center is, since I have not been able yet to get within the periphery."

"It seems to me that my difficulties are due to a lack of the right kind of concentration and knowledge of the subject, and to the constant changes and fleetness of the images in my consciousness to be studied."

"My difficulty in the study of psychology lies in my inability to carry on experiments in my own consciousness. It is very difficult for me to make a statement as to exactly where or what the trouble is, but it seems to be present, at any rate. At times I think that I have a glimpse, at least, into the work, and then again it is gone, and I am at a loss to find myself."

"When I try to study images or to hold them for growth I find I cannot do it, for before I have time to study them they are gone. I recall them again, but they are gone again. After I have studied them I do not see what good they do me, or why we are to study them. When I make observations I don't know whether they are the thing to give in class."

"At first everything seemed utterly without a point. Now it is somewhat clearer, but still things are hazy, and what few experiments I have tried do not bear upon the subject we are discussing. I do not seem to know how to make an experiment and get out of it anything useful.

"I have been studying other minds, mostly children's, and I find it difficult to adjust my thinking to my own mind, to focus upon my own consciousness. A very great trouble is now, and has been, self-consciousness."

"It has seemed to me that the entire difficulty was in myself, and that if I waited and really tried it would become clear to me. But now I think perhaps I have not made effort enough, having waited too much for the beginning to get clear."

"Already I feel the benefit of the little imaging I have done. I am conscious of a certain power in being able to watch the working of my own mind. While I see the benefit of the work, I feel I have come to the end now of imaging my own experience. I see that I have never really studied, have very faint pictures of any of my experiences. My effort now is not to let anything pass until I have an image of it in consciousness; but I want more to think of in psychology, and from this advanced step to look back on imaging; in fact, to carry it right along. If imaging is the simplest, perhaps it is the most difficult."

"What has helped me is seeing how the image has grown clearer and stronger in classroom work."

From these statements certain common difficulties may be discovered :

1. Overstrain, too much effort, an intensity that overshoots the mark; lack of quietness and relaxation of the mind.

Illustrations :

a. Very anxious to recall the name of some one whom we wish to introduce. Anxiety drives out the name.

b. An examination upon which very much depends. Neither words nor ideas come into consciousness. The cause is overstrain.

c. Trying to tell a story under stress of company.

2. A statement arouses a feeling of opposition.

3. Self-consciousness in speaking.

4. Doubt as to the value of the investigations, their personal value, or their value to others.

5. Desire to conform to the supposed wishes of the teacher, and to answer questions as he seems to require them to be answered.

6. Desire to come directly to some conclusion without going through a long, careful, and thorough investigation.

The following suggestions may be found of value in overcoming these difficulties:

Verify the statement, or prove, by investigation, that it is not true, keeping the mind firmly to the task until it is accomplished.

Self-consciousness brings about a partial paralysis of the organs of speech. The cause is pride, and fear that what we say may meet with disapproval. Self-consciousness may be overcome by a strong desire to help the class. Such a motive may bring great strength out of personal weakness. The struggle to express that which seems obscure develops the thought or defines the weakness.

Interest is the emotion that makes study possible. Feeling of value is interest, and without it study is not possible. Therefore it is of importance to convince yourself that such investigations as we are now attempting are of real value to yourself and others. Ask yourself these questions: Is it of value to you to know why you study? To know how you study? To sum up the result of your studies? As teachers, to know when and how your pupils are studying?

Fix your mind upon the subject itself and not upon the teacher. He desires only honest thinking, not any set answer, or forced acquiescence.

Do you grow by the teacher's work, or by your own?

Besides these individual difficulties, there are two intrinsic difficulties in studying psychology:

a. A marked difference in individuals, owing to the predominance of some one kind of imaging. If the teacher is strong in visual imaging, it is difficult for him to appreciate the explanations of one who is strong in tactile or motor imaging. Students often fail to comprehend the psychological meaning of the word "image"; they may believe that it relates only to vision. The word "image" covers all the products of the senses, all correspondence to external things,—color, sound, form, and the images that precede and accompany motor discharge. And it comprehends, too, all combinations of images.

b. Images pass in and out of consciousness with the greatest rapidity; some are clear and vivid, others are vague. It is difficult to investigate a state of consciousness and at the same time have the imaging normal; the investigation is likely to check the movement or changes of images. For this reason the experiments (see COURSE OF STUDY) should, in general, consist of the recollections of distinct masses of related images that have been acquired in the past; for example: What have you of your life history? Recall certain interesting events,—a visit to the country, travels, etc.; some masses of images acquired by study of geography, history, etc. Experiments upon the effects of words, upon the psychological function of the parts of speech, etc., may be carried on freely.

Can you estimate the time you have wasted in school?

A fair composite answer is, "I have learned definite lessons, have recited many pages, have finished some books, but still I have only vague results of that study; at least, I cannot sum up the results of the study of any book in a body or mass of correlated images."

If studying is imaging, have I ever really studied? is a very solemn question. The whole question turns on this definition of study. Study may be the exercise of judgment, inference, reason, will, and it may be mere word memorizing. The images acquired may now be beyond the reach of memory, but the power to reason and the discipline gained by the exercise of the will remain. I may have lost the images acquired by study, but the power and habits of study remain. Do they? If I can study, then I can show good reasons for or against the proposition that studying is imaging. Can I?

If very much time and toil are wasted in school, is it not of the utmost importance to know the reason why?

Reread July number of COURSE OF STUDY, pp. 28 and 29.

One explanation is possible: Owing to the fact that the pupil has never really studied, he is not now able to investigate, to begin the study of his own consciousness.

On the other hand, it is more than possible that he has studied. He is in possession of a mass of related images in his own life history. Some of these images are distinct in themselves and strong in their relations to other images. He has made many plans in preparation for teaching, and for the making of useful articles. When he plans he must image; that is, think of the appearance of an executed plan.

NOTE. — No class I ever had tried harder or with more earnest thought than does the present one. This review is not a criticism, but the outcome of an attempt to teach better.

Pedagogy

Bertha Payne

The study during this month will center around the questions that relate to choice of subject-matter and materials, first for the children of all grades, later for the children of the kindergarten. We are led to this from a discussion of the teacher's function. Furnishing conditions for growth involves the choice of subject-matter and materials, and in such selections the teacher's great determining power holds sway. The questions arise, Does our selection always meet the children's interest? How shall we know beforehand what ideas will be formed concerning the matter presented?

I. Guiding Principles: 1. Experience of the mass of the children.

2. Leading interests that arise from the impulses that dominate at each stage.

3. Opportunities in the subject for (a) expression in making, painting, or other modes; (b) for investigation; (c) for experiment; (d) for choice or initiative in construction and experiment; (e) for co-operation.

4. Larger or more detailed interests growing out of the subject. Are all subjects equal in affording food for expanding interests?

II. Selection for the Kindergarten: In choosing subject-matter for the kindergarten we are thrown back upon our original problems: What are the needs of the children in the play period of growth? and how do they differ from those of the older children?

1. Physical activity: Opportunities for vigorous action. Subject must allow frequent change of movement, and even vigorous action in carrying out the ideas aroused. Is making with the hands a sufficient exercise for the body for the youngest? The plays of house-building and house-furnishing with the large blocks require real effort in placing and carrying. Can this proportion between imagery and execution be carried on throughout the year with the same opportunity for exercising the whole body? Watch groups of children and note the children playing singly; how long do they remain mentally busy and bodily inactive?

2. Interest: What are the interests universal enough to appeal to children in all conditions of life? The subject of home life covers a great variety of operations within the walls of the house. The garden furnishes a still wider range, as do also the

occupations or trades that contribute daily to furnish necessities and comforts at our doors. All these processes have an inherent interest for little children. How do they show it? Will these interests be food enough to furnish nutrition for mind growth throughout an entire year? Will the pursuance of them give moral and æsthetic impulses a chance for expression? Will it bring the oldest and youngest into natural co-operation?

Record all the plays you see of any children between the ages of three and ten years and note in each instance the subject, development, and manner of execution.

3. Differentiation of subjects: The point at which children begin to show their interests in different forms is valuable for the teacher's study. It is a question whether the larger subjects that are taken up in the school enter into the kindergarten. (a) Where are the beginnings of history, sociology, language, and domestic economy to be found? Have they a germinal phase of interest for the kindergarten child? Examine recorded plays with these questions in mind. (b) How do the youngest children begin nature study? Meteorology? Geology? Physiology? Botany? Zoölogy? Physics? Is the beginning of interest in all these phases of nature shown in any characteristic ways? Note and record instances of observations and experiments made from their own initiative by little children.

The subject of materials and playthings will be taken up in January.

Pedagogics of Nature Study

Wilbur S. Jackman

Observation

All education rests upon observation. Whether it is in the domain of Natural Science, where, obviously, all knowledge is gained by presentation of objects and phenomena to the senses, or in the field of History, where the lessons are to be interpreted and applied to life in its present condition, observation is of fundamental importance.

Observation is the mother of inference; given the former, and the latter is inevitable. Nothing points more clearly to the distinct personality of each human being than the fact that no two persons will make exactly the same inference regarding an object which they observe in common. Each observes from a point of view that is slightly different from that occupied by the other and his inferences vary accordingly. This may lead to endless contention; but discussion respecting the meaning of facts is always healthy until those engaged refuse to repeat their observations that their inferences may be corrected.

The natural test for the extent and correctness of an observation lies in the expression which the individual is able to give respecting it. While it is not uncommon for one to say that he sees and knows more than he can express, it is doubtful if this is ever true. The technique of expression in all its forms is exceedingly simple. For instance, in expressing himself through a drawing, the pupil is required to do so by means of lines, straight and curved, which he can draw with little or no trouble. The real difficulty lies in putting the lines together at the proper angle and in their right relations. But this does not belong to the technique of expression; the inability to represent by drawing must be referred, therefore, to the fact that the image is indistinct as a result of insufficient observation.

Again, in language, it is possible to describe things, most complex, by the use of words that are employed in common speech; yet it is not uncommon for pupils to say that they can see more than they can tell, although their ability to talk may be beyond question.

In modeling, the clay is most plastic. It readily yields to treatment, but there are comparatively few who can bring it into a form which belongs to the object observed. This is clearly not the fault of the material used, nor of the ability of the pupil to mold it, but the difficulty lies rather in an imperfect image that has been obtained through faulty or deficient observation.

The accuracy and the extent of an observation depend upon the purpose which controls the one who is making it. It is usually true that the desired knowledge concerning an object may be obtained through a partial examination and the observation upon this point will be clear in proportion to the importance of the knowledge. All other knowledge of the object, which is absolutely necessary if we are to have an image of it clear enough to enable us to fully represent it by any of the means of expression, is weak and defective because the observation has not been intense.

Drawing, painting, modeling, etc., are difficult, therefore, because they require an accuracy and extent of observation which is not considered absolutely necessary by most people. For example, one may know, for all practical purposes of his life, the house in which he lives, and yet he may be utterly unable to represent that house in a drawing. That is, while he might know the proper number of windows in the front, he would fail, perhaps, in getting the due proportions of each window, and this would be because that particular observation had never been called out by any function that the house or window had peformed for him. The window allowed light to come into the interior, and he learned to know it from this function, but he learned nothing more.

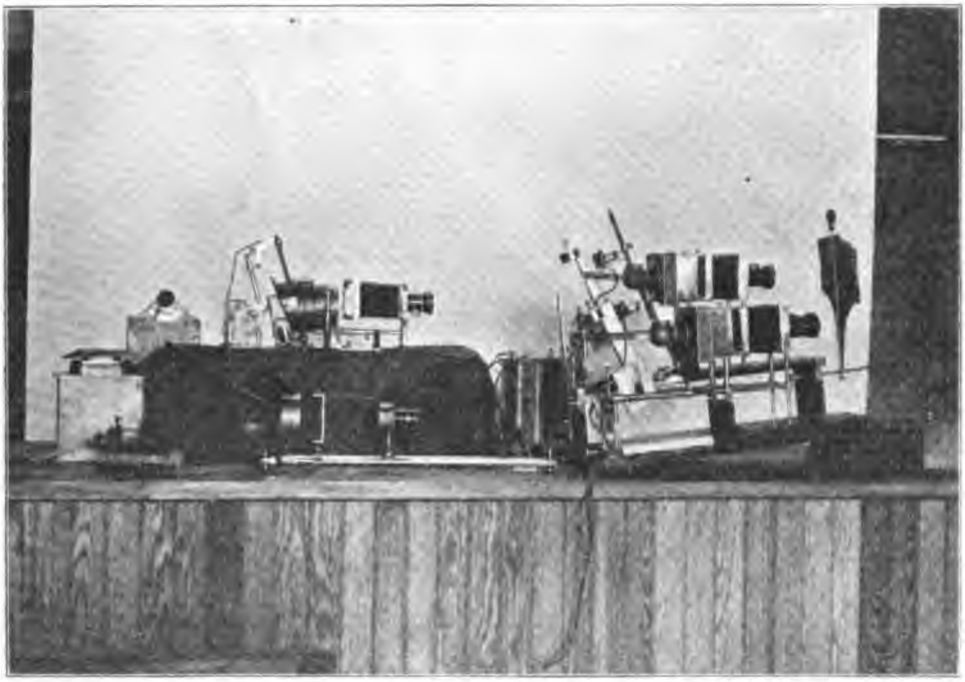
So in the study of a tree. The lumberman recognizes a tree by signs, most superficial, because his knowledge may end with knowing the kind of wood. The nurseryman by a glance merely at the fruit recognizes the different kind of apple trees in his orchard. Both, however, might utterly fail in an attempt to draw the tree, because its function, so far as they are concerned, has not demanded that close and specific observation which must precede any drawing.

The fact seems to be that most people see just enough of an object to enable them to dodge it. Very much observation, so called, results in nothing more than a mere consciousness of the *presence* of the object. No image of educative value is formed. It will be a surprise to any one to scrutinize closely the impressions received from an object, even after looking steadfastly at it for some time. He will find that he has been impressed chiefly by those characteristics and properties which indicate a particular function. Other characteristics and properties, no matter how important, lie indistinctly in the background of his consciousness, and it requires considerable effort, on returning to the observation, to bring them up to their proper relation in the image.

The great fault to be avoided, therefore, in planning and conducting work in observation is that of insisting upon the presentation of objects or parts of objects that make no appeal through their function. When this is done it is inevitable that the interest must be spurred on by factitious means which never come from honest purpose and never lead directly to real knowledge. Through this mistake, chiefly, arise all the difficulties pertaining to the various forms of expression.

Pedagogic Course in Physics

Charles W. Carman



Light, Shadow, and Color

In following the outlines for the months of October and November, the principal correlation possible proved to be along the lines of "Observations in the Grades" and the study of "Physiography." That part of Physics proposed for study during the present month is susceptible of much wider correlation. It is proposed to give emphasis to the practical side of the work. The instructor will give demonstrations before the class and will require the members of the class to do the same. The class demonstrations will be upon the following topics:

Rectilinear propagation of light; images produced by small apertures; theory of shadows; images in plane mirrors; images in concave mirrors; caustics by reflection; convex spherical mirrors; the construction of a refracted ray; critical angle; total reflection; refraction through a prism; construction for deviation; images due to lenses; optical center of a lens; spherical aberration and distortion of images; dispersion; chromatic aberration; "artificial rainbows"; monochromatic light; spectra, kinds of; interference and diffraction; Newton's rings; thin films; the production of "artificial sky color"; spectra by means of diffraction gratings; Young-Helmholtz theory of primary color sensations; mixing colors; mixing pigments; composition of pigments; optical instruments, such as the achromatic lens, the photographic camera, the eye, simple microscope, compound microscope, opera-glass, reflecting telescopes, refracting telescopes, projecting apparatus.

Nearly all of the demonstrations indicated above are shown by means of some form of projecting apparatus and a few simple accessories.

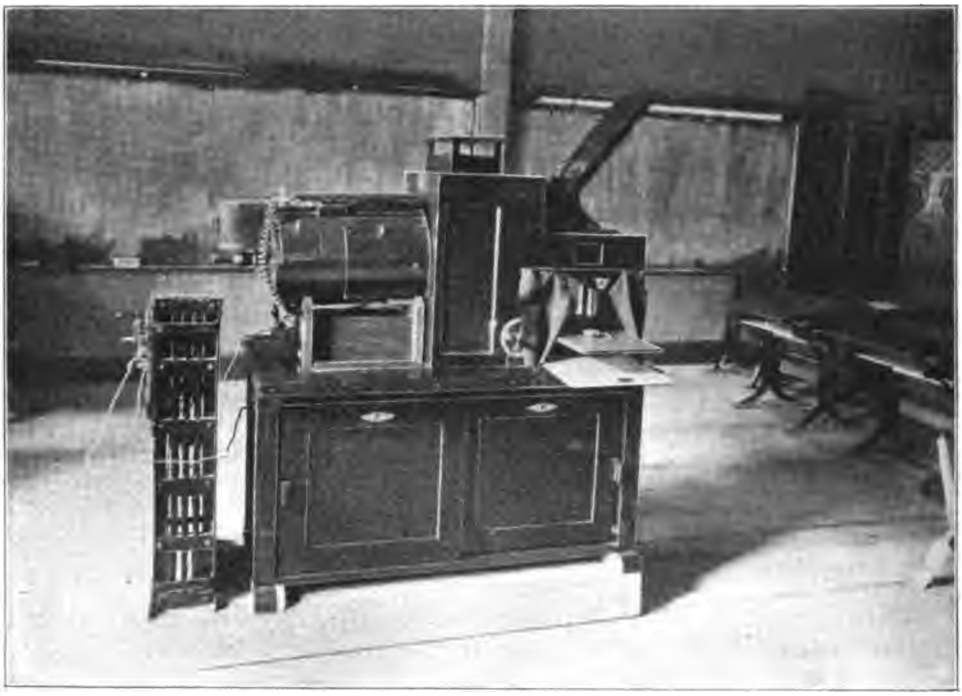
Reproductions are given from photographs, of the projecting apparatus now in the physical laboratory of the Chicago Institute.

During the month each member of the class will give demonstrations with the following forms of apparatus:

Oil, gas, and electric sciopticons; oil, gas, and electric stereopticons; heliopticons, and the epidiascope.

The other reproduction is from a photograph, not of the object itself, but of the projection of the object upon a screen by means of the epidiascope. Although the minute details of the structure of the shell are seen distinctly, the object photographed is nothing but an image. The shell from which the image was produced is slightly smaller than the reproduction.

The individual laboratory work will be with the radiometer; camera obscura; mirrors, plane, concave, convex; photometers; prisms; lenses; spectroscopes; diffraction gratings; the polariscope.



Each student will be furnished drawings and descriptions for the construction of a simple form of sciopticon.

The "Holmgren Test" for "color-blindness" will be made by members of the class.

Defects of vision will be tested and an effort made to measure the amount of the defect.

CORRELATION:

With Nature Study.—The light from the sun, moon, and stars ; the color of the sun and other stars; the color of sunsets; the color of the landscape, the water, and the sky ; the color of the spring and of the autumn leaves.

With Astronomy.—The composition of the stars; eclipses; telescopes.

With Mathematics.—Micrometric measurements.

With Psychology. — Relation between physical and mental images.

With Physiology. —The construction of the human eye; the optic nerve; the design and use of the ophthalmoscope.

With Art.—The absorption and reflection of light; mixing colored lights; mixing pigments; the composition of pigments; permanent colors and colors that fade.

With Home Economics.—Wall-paper and calcium colors; color as a test of food products; the color of clothing.

With Latin, Greek, French, and German. —The derivation of terms used in the study of light, such as "telescope," "microscope," "spectroscope," radiometer, stereopticon, etc.

With Manual Training.—The construction of optical apparatus.

With the Library.—References:

Elementary. — Woodhull, J. F., *First Course in Science;* Mayer and Barnard, *Light;* Hepworth, T. C., *The Book of the Lantern;* Dolbear, A. E., *The Art of Projecting;* Hall, E. H., *Lessons in Physics,* pp. 69-103; Harrington, C. L., *Physics for Grammar Schools,* pp. 93-104; Stewart, Balfour, *Physics,* pp. 89-100; Bert, Paul, *First Steps in Scientific Knowledge,* pp. 25-38; Hopkins, G. M., *Experimental Science,* pp. 200-346.

General References.—Carman, C. W., *Outlines of Physics,* pp. 128-146; Crew, H., *Elements of Physics,* pp. 292-338; Nichols, E. L., *Outlines,* pp. 370-425; Stratton, S. W., *A Laboratory Course in Physics;* Hastings and Beach, *General Physics,* pp. 599-752; Carhart, H. S., *University Physics,* pp. 226-335; Preston, T., *Theory of Light;* Tyndall, *On Light;* Vogel, *Chemistry of Light and Photography;* Tait, *Light;* Lommel, *Nature of Light.*

Lectures:

December 11, 12:00-1:00, Room 10, Dr. Henry Crew, Professor of Physics, Northwestern University, will give an experimental lecture before the class on "Some Illustrations of the Wave Theory as Found in Light, Shadow, and Color."

December 18, Professor S. W. Stratton, Associate Professor of Physics, University of Chicago, will give an experimental lecture before the class on "The Measurement of Light Waves.

Both Dr. Crew and Professor Stratton are doing research work in the subjects upon which they are to speak.

Chemistry

Alice Peloubet Norton

The work for the year in chemistry began with a study of fruits and leaves. The determination of the amount of moisture in the leaves led to the discussion of the question whether we were justified in assuming that the loss on evaporation was wholly water. Some facts seemed to indicate that we were not, as for instance, that the addition of water to the dried fruit does not restore it to its former flavor. One pupil heated some apple in a test tube, as gently as possible, and with the help of a condenser collected the moisture given off. Upon testing with litmus he discovered the liquid to be acid. The same pupil is trying to collect the moisture given up by the leaves at the temperature of the drying-oven.

The class concluded that we could not at present determine what substances were given off to cause the loss in weight upon the charring of the dried leaves, and this was left for future study. Nearly all recognized the carbon.

While the drying of the fruit and leaves was going on, the physical properties of water were studied as outlined, each pupil ascertaining certain facts for presentation to the class. The determination of the chemical composition of water by means of electrolysis, with a comparison of the volumes of the two gases formed, and the testing of each, is followed by the further study of hydrogen and its properties. After its preparation from zinc and acid, and the synthesis of water by the burning of a jet of hydrogen, the same gas is again obtained, by the action of sodium on water.

Each pupil prepares oxygen in the usual way with potassium chlorate and manganese dioxide, studies its properties, and writes a clear, concise outline of the subject, giving both the results of personal observation and of further study from reference books. The formation of oxides from the oxygen of the air is shown by igniting in an open crucible five grams of zinc dust or of pulverized iron, carefully weighed before and after heating. The zinc must be heated with care to avoid volatilizing the oxide. The student is asked to compare combustion in oxygen with that in air and to inquire what kind of substance is probably present in air in addition to the oxygen. If the questions of the class lead to it, the proofs that air is a mixture rather than a compound will be given. The following experiment will illustrate the composition of air and the properties of nitrogen:

Wet the inside of a test tube and put in some iron filings, leaving in those that cling to the sides when the test tube is turned upside down. Invert the tube in water and leave for twenty-four hours. Insert a lighted splinter of wood in the gas remaining in the tube. Measure the water in the tube and the capacity of tube.

The student who has been able to do more rapid work than others may make the determination of the weight of a liter of air as follows:

Place 25 c. c. of water in a stout flask of about 250 c. c. capacity, and boil until the interior is full of steam. Remove the lamp, cork the flask tightly, and allow it to cool. Weigh accurately. Draw the cork and determine the increase of weight. Find the volume of air weighed. From these values, calculate the weight of one liter of air under the conditions of the experiment. The result is approximately correct.

A return to the work with the leaves shows carbon to be an important ingredient of these, and this element is next considered, and in connection with it the study of combustion will be continued. The following experiments, among others, will be used:

(a) Shut the holes of a Bunsen burner, and hold in the flame the edge of a cold, dry evaporator. Open the holes and see if you can burn off the black which collected.

(b) Sprinkle a very little powdered charcoal in the flame.

Examine the structure of your lamp. Explain the difference in the color of the flame when the holes are open and when they are shut.

Press down upon the gas-flame a piece of cold fine wire gauze.

Turn off the gas and hold the cold wire gauze about 6 inches above the burner. Turn on the gas again and hold a lighted match above the gauze.

State the three conditions necessary for combustion. Why does blowing a flame sometimes cause it to burn and sometimes extinguish it?

Insert a piece of wood in an ignition tube and hold in the flame of your lamp. Light the gas which comes off at the open end of the tube. Examine the residue and burn it on a piece of wire gauze.

Put a piece of glowing charcoal in a deflagrating spoon into a covered bottle full of air. When it ceases glowing, remove and insert a lighted match. Name the gas made. Pour in the bottle about 5 c. c. of lime-water and shake.

Test in the same way a bottle full of air.

Breathe through a short glass tube into a test tube containing 10 c. c. of lime-water.

Carbon dioxide will also be obtained from marble, and the test for carbonates given; as a product of fermentation; by the action of yeast on molasses; and as a product of decay.

Dissolve 5 c. c. of molasses in 50 c. c. of water. Fill a test tube with the mixture, and add to it a little yeast. Invert the test tube in an evaporating dish filled with more of the mixture (the clamp of the ringstand may be used to keep the test tube in place), and leave until the next exercise. Then pour the gas into 5 c. c. of lime-water in another test tube.

The questions, Is there carbon dioxide in the air? Why not in large amount? What becomes of it? will lead to a consideration of the relation of this gas to the life of the plant, and the source of some of the carbon found in the fruit and leaves.

Throughout the work constant reference is made to the materials with which the course started, in order to give a definite aim to the investigations, and to form in the mind of the pupil a clear image of the processes and results of plant activity. Mathematics has been introduced in the calculation of percentages of water and carbon in leaf and fruit, of the amounts of oxygen and hydrogen in the water of the leaf, and in the estimation of the proportion of these different elements in the whole plant, and in similar problems. Incidentally the pupils have learned the metric system, the use of the centigrade thermometer, and its translation into Fahrenheit, and have acquired some skill in bending glass and other manipulations, and in weighing.

Geography

Zonia Baber Wallace W. Atwood

The lack of an audience genuinely interested in what the student says and does leads to a result deplored by every teacher of wide experience—a lack of enthusiasm in recitation.

When forty pupils are requested to write upon the same subject, for no other apparent reason than that the teacher, who already knows what they have to tell, may read their papers, mark them with a blue pencil, or gently consign them to a wastebasket, they are frequently induced to put forth the necessary effort only by means of bribes or threats.

To secure for our pupils the consciousness of an interested and appreciative audience an effort is being made to establish a correspondence between the students of the Chicago Institute and students in certain schools in foreign places. The object in view is to establish personal relations between our pupils and the other people of the world.

Our pupils will send to the foreign children specimens of their regular school work, such as drawings, paintings, small pieces of work in textile fabrics, written exercises, photographs of field, laboratory, and dometic science work. Something of the geography, meteorology, botany, zoölogy, history, and industrial activities of this region will appear in the descriptions. By this means we hope to give the children of other lands a picture of certain phases of life in this locality, including the games of the children, their home life, theaters and other entertainments.

We trust that our friends in other countries will so far as is possible give us a similar account of their lives and surroundings. A child who represents in color a landscape, a bird, or autumn flowers, models in clay the animals in the zoölogical garden, or describes the sand dunes near Chicago for other children whom he knows of as friends through their letters, and whom he knows to be unacquainted with this environment, will have a far deeper interest in his work than an inferior motive can command.

Moreover, descriptions of foreign countries found in books seem colorless to children when compared with similar statements in personal letters. A letter from a child in Northern Norway stating that at Christmas-time he goes to school by moonlight, as the sun, at this time of year, is not seen for some weeks at his home; or one from Sidney, Australia, telling of the heat at Christmas driving the people to seek comfort in the mountains; or a letter from Java telling of yearly summers and almost equal days and nights throughout the year, will arouse questions in the student's mind, the solution of which will lead him into many interesting phases of geography,

The close relation which a personal correspondence with the different nations suggests, leads to the development of a fraternal attitude toward all peoples—a world sympathy — which is one of the highest aims of our teaching.

Schools in Correspondence with the Chicago Institute

Mexico City, Mexico; Hilo, Hawaiian Islands; Honolulu, Hawaiian Islands; Tokio, Japan; Kobe, Japan; Fusan, Korea; Seoul, Korea; Shanghai, China; Calcutta, India; Udaipur, India; Kandy, Ceylon; Djokjakarta, Java; Cairo, Egypt; Jerusalem, Palestine; Athens, Greece; Christiania, Norway; Berlin, Germany; Paris, France; Vienna, Austria; Rome, Italy; Sidney, Australia; Wellington, Cape Colony; Manila, Philippines; Havana, Cuba.

Physiography of the Land

NINTH GRADE

X. Glaciers. The work during this month will be a development of the study of glaciers and glacial formations, as introduced on the several field trips taken earlier in the quarter. The syllabus given in the November number, pages 187 and 188, suggests the manner in which the subject will be treated. The references on glaciers, given on page 188 of the same number, need not be repeated here.

General Geology

ELEVENTH GRADE

During the months of October and November it has been the aim, in this course, with the aid of the field trips, to have the students become acquainted with those processes which are to-day bringing about great geological changes, and also to have them become familiar with the common rocks and with the structural forms found in the great rock-formations.

This month the work will be based on the study of physiographic areas of the United States beyond our immediate environment. In this study it will be the aim to introduce enough geology to make the history of each area clear and the picture of the present conditions in each area real. After this ground has been covered it is hoped that the general subject of Historical Geology and Continental Evolution will mean more to the student.

IX. The Coastal and Gulf Plains.

1. Location and physiographic boundary. (a) The "Fall-line." Geological conditions at the "Fall-line." Relations of these falls to the early history of this country. (b) The present shore-line. How is it changing? (c) The edge of the continental shelf.

2. Topography of the coastal plains.

3. Drainage of the coastal plains. (a) What is the story of the old rivers crossing the lowland? (b) What is the story of the young rivers of the lowland?

4. Geological formation and structure. (a) Origin of the material. (b) Present condition of the sediments. (c) Artesian wells in the sand-reefs.

5. Settlement and development. (a) Location of towns. (b) Occupations of people.

X. The New England Plateaus:

1. Location and physiographic boundary. (a) The inland margin of the area. (b) The present coast line. How is it changing? What recent changes has it suffered? Influence of shore line on settlement and occupations in New England.

2. Topography of New England. (a) Erosion history. (b) Glacial history.

3. Drainage of New England. (a) Story of the old rivers. (b) Explanation of the lakes.

4. Geological formations and structure. (a) How have these influenced the development of the topography?

5. Settlement and development. (a) Location of towns. (b) Occupations of the people.

XI. Piedmont Plateau. 1. Location and physiographic boundary. (a) The Fall-line. (b) The Appalachian mountains.

2. Topography. Its erosion history.

3. Drainage of the Piedmont belt.

4. Geological formations and structure. (a) How have these influenced the development of the topography?

5. Settlement and life in the Piedmont belt.

XII. The Appalachian mountains. 1. Location and physiographic boundary.

2. Topography of the mountains. (a) Develop fully the erosion history of this belt. (b) Influence of topography on migration of peoples.

3. Drainage of the Appalachian. (a) The story of the great rivers.

4. Geological formations and structure. (a) Source of material. (b) Original position of sediments. (c) Present position of beds. (d) Mineral resources of this area.

5. Settlement and development. (a) Location of towns. (b) Occupations of the people. (c) History of migrations through this belt.

If time permits other areas will be treated much the same as suggested above.

References: Scott, *Introduction to Geology;* J. W. Powell, *Physiographic Regions of the United States;* Davis, *Physical Geography;*

Davis, *The Physical Geography of Southern New England;* Bailey Willis, *The Northern Appalachian;* C. W. Hayes, *The Southern Appalachian.*

Pedagogic School

The course of study for the Pedagogic School for December will be the consideration of the motive for teaching the subjects outlined below, together with the application to the different grades. The invention of laboratory experiments by which the forces and results in nature can be produced in miniature will be strongly encouraged.

I. Wind: Its use and work.

(See Meteorology—COURSE OF STUDY, October.)

1. Evidences of air currents.

Report observations in movement of clouds, smoke, dust, leaves. Height to which seeds and other materials are carried.

2. Velocity: of ordinary wind; of storms.

3. Direction of wind movement at Chicago; of prevailing winds; of storm winds; of clearing winds.

FIELD TRIP TO DUNE PARK.

Students were given the following syllabus as an aid in the field:

FIELD WORK AT DUNE PARK

MATERIAL NEEDED: Take, if possible, baskets, knives, bottles or jars, compass, clinometer, level, magnet, trowel, hydrochloric acid, notebook, and drawing material.

I. Points of Observation

I. BETWEEN CHICAGO AND DUNE PARK.

Topography of the country.

1. Relation of land and water. Presence or absence of rivers, lakes, swamps; shape of valleys; wearing or building of streams.

2. Relation of ridges to depressions. Height, width, and direction of ridges; distance between ridges; drainage of depressions.

3. Material of ridges.

4. Vegetation on ridges, in swamps.

II. AT DUNE PARK.

Topography of the region; relation of hills and depressions. (a) Walk to the ridge south of the railroad track, estimate the distance between this ridge and the next distant south ridge. Note topography, soil, and vegetation of the intervening depression; note soil and vegetation of the ridge. (b) Walk northward toward the lake.

1. Hills: Find a hill where a cut reveals material. Shape, height of the hills. Measure the inclination of the steepest slope; the least inclined slope; note the direction of each. Material found; shape, size, composition, stratified or unstratified. Note definitely how the wind is affecting the sand to-day; beginning of dunes; relation to obstructions; relation to direction of wind; exact process of formation.

2. Depressions: Shape; soil; comparative altitude; relation of depressions to each other.

3. Lake shore: Shape of the coast; width of the beach; angle the waves strike the shore; shape and height of the waves as they approach the shore; material brought in by waves; direction of return of the water from the shore; material taken back by the waves; color of water near the coast, off the coast. Note the exact process of the formation of beach ridges.

II. Vegetation

I. SWAMPS.

1. Make a careful collection of specimen plants which are found: (a) in the dryer portions; (b) on the margins; (c) growing in the water.

2. Make a careful diagram showing the position of each kind of plant in its relation to the swamp.

3. Is the present vegetation tending to perpetuate or to extinguish the swamp?

4. Is there any evidence of an earlier vegetation in the swamp areas?

5. What kinds of woody plants are found in the swamp areas? Have any trees gained considerable age? The oldest?

NOTE.—If you do not know the names of the trees, bring to the class with you small pieces of the wood, and small branches with leaves.

6. Do the plants tend in any way to spread the marsh-like conditions?

7. Consider the part played by each kind of plant found in the swamp: (a) the pond-lilies; (b) the rushes; (c) the algæ; (d) the grasses and sedges.

8. Can you see any interrelations among these plants?

9. How many of these plants are flowering—*i. e.*, produce true seeds?

10. How are these seeds distributed? What plants adapt their seeds for water distribution?

Do the seeds float? When? Can you find them at the bottom of the water?

NOTE.—In all cases, collect and bring specimens to class with you.

11. Are the plants mostly annual or perennial? Are the conditions more favorable for one than the other?

12. In what ways do the vines find favorable conditions?

13. Consider what must become of the plant at the end of the growing season; what are the chances of fossilization?

14. What would be the first steps to be taken in reclaiming the marsh for the purpose of raising cultivated plants that might be grown here?

15. Are there any swamp-loving cultivated plants that might be grown here?

16. Are there any peat formations that might be used as fuel?

17. Are there any signs of bog-iron ore deposits about the marsh?

18. What are the relations of the swamp to bog-iron ore deposits?

NOTE.—Collect and bring to school for laboratory study a sample of swamp water, a pint bottle full at least.

II. THE SAND DUNES.

1. Look for the line which divides the vegetation of the marsh from that of the dunes. What plants grow on both sides of the line?

NOTE. — Collect specimens of the plants that grow on both sides of the line, and bring them to school for laboratory study.

2. What plants seem to get the first firm hold in the new sand-hills? Observe carefully the advance line of the dunes.

3. What efficacy have the marsh plants in retarding the drifting sands?

4. Where is the greatest variety of plants found, in the marshes or on the dunes? Determine by actual count.

5. Make a special study of the cactus; collect specimens of the entire plant.

6. What adapts it to the dune rather than to the marsh? Compare with the pond-lilies — root, leaf, stem, flower, and fruit. [The fruit is non-poisonous.]

7. What are its methods of distribution?

NOTE. — Bring ample specimens of the cactus to school for laboratory study.

8. Make diagrammatic map of the dunes between the marsh and the lake shore, and mark their ages as shown by the vegetation.

9. Note the kinds of trees growing on the dunes; compare with those growing in the swamp.

10. Note the relative ages of those on the dunes and in the swamp.

11. Study the belt of vegetation nearest the lake shore. What part does it play in the formation of the dunes inland?

12. Since the ridge of the sand is nearest the source of the sand, how does it happen that plants can gain a foothold here more easily than they do immediately inland?

13. What causes the interruptions in the shore ridge of sand?

14. Make a sketch of one of the newer dunes and show on which slope the plants gain a foothold first. Can you see a reason?

15. Which are the first woody plants to take possession of the dunes; the deciduous trees or the conifers? Is there any reason evident?

III. Animal Life

I. IN THE SWAMP.

1. What forms are provided for largely by the plant life of the swamp?

2. What peculiarities of structure enable some forms to take advantage of both land and water in the swamp?

3. Are these same forms to be found on the lake shore? What reasons?

4. Do any animals find it possible to take advantage of the swamp mud at the bottom of the water?

5. Are any birds attracted by the berries or dry seeds of the plants?

6. Can you see any special adaptation of this class of birds to the swamp life?

7. Are such birds permanent or temporary residents?

8. What swamp birds are songsters? Can you see any adaptation here?

9. Are there any birds that get their food from the water only? From the mud under the water? From the swamp margin?

10. Between what animal forms can you see the greatest conflict?

NOTES. — Bring to school for identification and further study specimens of the various forms found.

Fill a quart jar by immersing it and allowing aquatic plants to enter with the water. Bring to school for inspection with the microscope.

11. Are swamp conditions favorable for mammalian life?

12. Are there mammals present?

13. Are there many evidences of the past animal life of the swamp?

II. On the Dunes.

1. Which precedes, if either, the animal or plant, in the establishment of itself upon the dunes?

2. What are the adaptations required to fit an animal for dune life?

3. What birds, if any, peculiar to the dunes? What are their adaptations?

4. To what extent is the life of the birds associated with the vegetation and sand on the dunes?

5. Does the lake shore or the lake show any contrasts in bird life? What adaptations required in this area?

Note. — Collect specimens of the dune insect life, and bring to school for identification and further study.

6. Are there any traces of past animal life about the dunes?

7. Do they furnish any support for mammalian life?

8. Do you find any evidences of conflict among the different forms?

Model a map of the Dune Park region. Make a map of Chicago and environs, including all the points visited in the field trips.

1. Dunes and associated swamps.
   - a. Relation to present lake shore.
   - b. Building and movement of dunes; relation to wind; to vegetation. (Note: Make a sand dune in laboratory.)
   - c. Source of sand supply.
   - d. Currents of Lake Michigan. See current chart of Lake Michigan.
2. Use of the dunes.
3. Location of sand dune areas of the world. Account for distribution.
4. Influence of sand dunes on the industries of inhabiting people.
5. Influence of wind on bodies of water.
   - a. Waves.
   - b. Currents.
6. Influence of wind on distribution of vegetation; of animals.
7. Sanitary use of wind.
8. Man's control of wind as a working force.

Questions:

In what grade should the study of the winds begin?

What aspect is appreciated in the different grades?

What experiments in physics does the subject necessitate?

In what grade would you teach the use of the thermometer, barometer, and anemometer?

What is the educational value of the daily weather maps?

How use the child's interest in kite-flying, boat-sailing, balloons, and flying machines, in teaching the winds?

What mathematical problem does the right teaching of the subject demand?

What, if any, is the value of the use of such wind stories as the "Harpies," and "Story of Paw-puck Keewis" in connection with the story of the winds?

Make a list of appropriate wind stories.

What wind songs do you consider appropriate?

Write a plan for teaching the winds to any grade you prefer.

References: Weather map of the United States, Davis, *Elementary Meteorology;* Davis, *Physical Geography;* Ferrell, *Popular Treatise on the Winds;* Waldo, *Elementary Meteorology;* Geike, *Physical Geography;* Mills, *Realm of Nature;* Archibald, *The Story of the Atmosphere;* Gregory, *Elements of Physiography;* Reclus, *Earth,* p. 90.

Changes in Progress Beneath the Surface of the Earth

1. Evidences of the movement of the earth's crust in this region.

(a) How was Stony Island formed?

(b) Possible heights of Stony Island?

2. Mountains: (a) Appearance; (b) Location. Cause of the great mountain systems. (c) Associations. (d) Formation: by folding, by faulting, by erosions. Examples of each. Make mountain range in laboratory. (e) Use, in relation to moisture; drainage of continents; relation to distribution of plants, animals, and peoples. (f) Esthetic value of mountains.

What mountain systems have acted as fortifications for historic peoples?

How may a mountain range change from a defense for a people to a weakness?

3. Volcanoes: Visit Field Columbian Museum to see volcanic products and models of volcanoes. (a) Appearance of volcanoes, active

and inactive. Read Pliny's description of the eruption of Vesuvius. (b) Location in relation to mountain ranges. (c) Formation. Laboratory experiment in formation of volcanoes. (d) Use of volcanoes. (e) Influence of mountains and volcanoes on the mythology and religious beliefs of primitive peoples. Location of noted sacred mountains.

Questions:

Can people living on a plain have an image of mountains?

How introduce a study of mountains to children of the plains?

What is the value of projected pictures over small photographs?

What is the best way of reproducing in miniature the processes of mountain-making?

Make a reading list for children on the subject considered during the month.

Write plan for teaching the subject to any class you may choose.

References: Scott, *Introduction to Geology*, pp. 332-342; Dana, *Manual of Geology*, pp. 24-28, 345-371; Geikie, *Text-book of Geology*, pp. 1071-1089; Reclus, *Mountains;* Hutchinson, *The Story of the Hills;* Reclus, *The Earth;* Mill, *Realm of Nature.*

History and Literature

Emily J. Rice Gudrun Thorne-Thomsen

Elementary School

The value of our work in history depends largely upon the power of the pupils to relate the life of the past to present social conditions. For this reason, in planning the course of study, it was necessary to consider at each step the basis which the pupils had gained by actual experience. The chronological order of the subject-matter is not our guide in teaching children. Observation of events and participation in certain phases of community life furnish the only material by which they can interpret historic facts. The study of the past should react upon the present and give fuller meaning to experience. It will do this when social conditions and historical ideas and events are given their proper connection in our teaching. From such an arrangement of work we may hope for a gradual growth of interest in industrial conditions and local institutions, and may cultivate habits of looking beneath the surface of things to discover their meanings.

Although first-hand knowledge is valuable at all times in the study of history, still, when the children are beginning to interpret the deeds of men, it is especially necessary that they should have material furnished by the immediate environment. This material may be found in the industries of the community, in local institutions, and in current events. From these we have selected, for special emphasis this quarter, the visit to a farm made by the entire school in October, and the presidential election. It is not intended that these shall be studied to the exclusion of those institutions which were made the basis of the course of study for each grade; these topics are to be considered because they are of especial interest at the present time, and considered by each grade in such a way as to aid the regular history work.

The trip to the farm has given the little children an opportunity to see the connection between the home and the farm, the source of some of the common foods, and the labor by which this food is produced. The methods of transportation of food to the city, and its distribution, with kinds of work and amount of labor involved, may also be considered.

In the middle grades, the children will compare an Illinois farm with one in New England and one in Virginia, and the work done now on the farm with that done in Colonial times. This involves the change from the home period of industry to the factory system.

The interest in the presidential election will be used in the higher grades to facilitate the organization of the pupils for their own government. The children will compare their methods in the election of officers with those used by the country in the election of its President. It also furnishes a good foundation for the study of the critical period of our history.

For the history work of each grade, see outline by the grade teacher. The general plan was given in the October number of the COURSE OF STUDY.

Secondary School

It was found after examining the students entered in Tenth and Eleventh Grades that, with few exceptions, they had not studied Ancient History. It was therefore thought advisable to let them all begin the study of ancient times, the Tenth and Eleventh Grade pupils proceeding more rapidly, if capable of doing so.

For the month of October the subject of study was Primitive Culture. The students were presented with the conditions of man on earth before he had any home, clothing, fire, or tools to work with. They traced man's development through savagery, barbarism, and the half-civilized stages, seeing how slow the improvements were, and how man adapted the material at hand to his needs.

From a relief map they studied the structural and climatic conditions of the continents with a view of finding out what advantages and disadvantages they presented to the development of primitive man. The great differences in the progress of the peoples inhabiting different parts of the globe were thus partly accounted for. As their subsequent study was to be Egypt and Greece, the geography of Eurasia was considered and compared with that of North and South America. Why did man attain a higher development in Eurasia, and more particularly in the countries grouped around the Mediterranean Sea, than in North America? This problem led to a study of the isolated areas of Eurasia, with their extensive coastline and protective barriers. The students also considered the peculiar advantages afforded by the great flood plains to a primitive culture, as, for example, the Nile Valley, and that of the Euphrates and Tigris.

By this geographic study the students were impressed with the fact that man's progress has been dependent on and limited by the conditions of his environment. They have begun, probably, to appreciate the inborn longing of man for better things, his patience and perseverance in working them out; also what thanks are due to the unknown, nameless thinkers and workers of the past.

The materials for study books and pictures were found in our library, but objects seen on the visit to the Field Columbian Museum were still more useful.

The students were assigned topics for investigation, and the recitation time was used by them to give to the class the results of their inquiry and to discuss these results and their significance. Wherever drawing would make an idea clearer or show the pupils where their knowledge lacked accuracy, this mode of expression was used. Finally, the pupils wrote a paper on this subject embodying the main features of the work; these papers were criticised from the standpoint of thought matter as well as from that of composition and language.

Work for November—Ancient Egypt: After having gained some conception of the development of man from savagery to the half-civilized stage, the pupils studied Egypt in order to investigate the oldest civilization, which has influenced more or less directly the onward movement of our race.

The progress and early civilization of Egypt is intimately connected with its geography, and an understanding of the physical condition of the country is therefore essential. The following topics were considered:

The Nile; characteristics of its flood plain. Cause of the inundations and the consequent fertility of the soil.

Irrigation; the "shaduf" and the "sakieh." Appearance of the Nile valley compared with surrounding deserts.

Climate and products of the Nile valley. Characteristics of the Nile valley reflected in development and history of the people.

Settled agricultural life encouraged. Large co-operative undertakings necessary, resulting in social and political organization. Protection against invasion by desert and sea, and consequent continuity of Egyptian history. Easy communication between parts of the country. Effect of monotonous agricultural life on the people. Scientific studies engaged in for the purpose of controlling the river, such as astronomy, engineering, etc. Relation between the religious beliefs of the people and geography of the country.

Did the isolated condition of the Nile valley always prove a benefit to the Egyptian people?

Did the geography of the country present favorable conditions for the building up of a great nation?

The pupils made maps of the country first in sand and then on the board. They were then taken on an imaginary trip up the Nile in order to awaken in them a genuine interest in Egypt. Descriptions, pictures, and stereopticon views were employed to give them a vivid image of the country as it is to-day, its people, and present social and political conditions. The monuments and objects of industrial and fine arts seen on the trip aroused a great many questions, which led to a study of Ancient Egypt. For the sake of economy and more effective work, the class was organized into groups, each group selecting a certain topic for investigation. The reports given by these groups formed the basis of discussion in the recitations. Topics considered by the class:

Organization of Egyptian society; power invested in the king; division into priests, nobles, common people, and slaves.

Characteristics of Egyptian civilization. Political, social, moral, and religious ideas of the people; their occupations and customs.

Architecture, the pyramids, tombs, temples, etc.; their artistic merit. Peculiarities of Egyptian construction. Use of color.

Literature and science. Variety of Egyptian literature.

Different forms of writing; inscriptions on the monuments and in the tombs.

The principal events in the history of Egypt.

Books. All the students are provided with a general history. In the library:

References: Fisher, *Outlines of Universal History;* Tillinghast, *Universal History;* Sheldon, *General History;* Wilkinson, *Ancient Egyptians;* Philip Smith, *Ancient History of the East;* Dunker, *History of Antiquity;* Thalheimer, *Manual of Ancient History;* Ebers, *Egypt;* Cameron, *Egypt in the Nineteenth Century;* Amelia Edwards, *A Thousand Miles Up the Nile;* Penfield, *Present Day Egypt;* Maspero, *Dawn of Civilization;* Chipiez and Perrot, *History of Ancient Egyptian Art;* Amelia Edwards, *Pharaoh and Fellah;* Reber, *History of Ancient Art;* Birch, *Ancient Pottery;* Viollet-le-Duc, *Habitation of Man;* Fergusson, *History of Architecture.* Not in the library: Ebers, *Uarda*, *Homo Sum*, *Bride of the Nile.*

Work for December — The Homeric Age: As was the case with Egypt, a study of the geography of Greece is necessary in order to understand its history.

GEOGRAPHY. Position of Greece with regard to other countries. Indented coastline and numerous islands; effect on navigation. Natural division of the country; effect on the formation of states. Differences in surface between parts of the country; effect on the development of the people, their occupations, character, and customs.

How would the division into many independent states affect the history of the Greek people? Advantages and disadvantages? Compare geography of Greece with that of Egypt. How are these geographic differences reflected in the civilization and history of the two nations? What natural advantages did Greece offer for the development of an early civilization?

The method of study is similar to the one indicated in the outline of work on Egypt. There will be an imaginary visit to the ruins of Tiryns and Mycenæ by the aid of descriptions and pictures. The pupils will study about the Homeric Age in their own text-book, Botsford's *Greece*, and will also be referred to the material at hand in the library. The study of the Iliad will be a necessity, as it will throw light on many questions and give a picture of the state of society in prehistoric Hellas. Subjects for study:

Organization of society: Power of the king, on what it was based; of the council of elders; of the general assembly. Classes of people: nobles, freemen, slaves; condition of each class.

Character and customs of the people; their home life and occupations. Their moral and religious ideas.

Construction of palaces and houses.

The Iliad as a character study; the characters of Achilles, Hector, etc.

The influence of the Iliad upon Greek life and ideals.

Its literary value and place in the world's literature.

Greek mythology.

References: Mahaffy, *Old Greek Education;* Church, *Pictures from Greek Life and Story;* Curtius, *History of Greece;* Guerber, *Story of the Greeks;* Christopher Wordsworth, *Greece;* Coulanges, *The Ancient City;* Von Falke, *Greece and Rome;* Guhl and Köner, *Life of the Greeks and Romans;* Mahaffy, *Old Greek Life; Dictionary of Greek and Roman Antiquities; Iliad,* Homer, translated by Bryant; Menatt, *The Mycenæan Age.*

American History in Twelfth Grade

Channing's *Student's History of the United States* is used as a text-book by the class.

The geography of the country was studied from physiographic maps. The students first considered the necessities of primitive people in the hunter, shepherd, and early agricultural stages, and then tried to discover how the geography of America is adapted to be the home of people in each of these stages. The following questions were discussed:

Advantages and disadvantages of the tropical forest regions; of the temperate forests; of the Cordilleran regions; which offered the best conditions for the development of civilization, and why; aboriginal tribes occupying each region and their stage of culture; parts of the Old World which offered the best conditions and had the earliest civilizations; continents best adapted for the development of early civilizations; animals and plants of America as compared with the Old World, and effects of these upon aboriginal life.

This preliminary work led the pupils to inquire into the topography of the country — its temperature and rainfall — and prepared the way for the study of Channing's chapter on *Geography*. Payne's *History of America* (Vol. I) is especially valuable for this work.

The pupils next considered the adaptability of the country to European people, using Channing's *Introduction* and references as a basis. Each student was required to investigate a special topic and give the results of his work to the class. They drew maps showing important points in the structure of the country.

Under Discovery and Exploration individual students investigated the following topics:

Geographical ideas of Homer and Herodotus; of Plato and Aristotle; of Pomponius Mela and Ptolemy. See Bunbury's *History of Ancient Geography*, Tozer's *History of Ancient Geogra-*

phy, Payne's *History of America* (Vol. I), and Fiske's *History of America* (Vol. I).

Norse Discoveries: effects of the Crusades; lines of trade to the East; Venice in the Middle Ages; Marco Polo and Mongol rule in Asia; the Turks and loss of lines of trade. See Winsor's *Narrative and Critical History* and Winsor's *Columbus.*

Portuguese voyages; Spain and the Moors; Toscanelli; Columbus; Cortez and the Aztecs; Pizarro and the Incas; Champlain and French ideas of colonization; Raleigh; the Spanish Armada and its results. References in Channing's *History* and *Guide to American History.*

The pupils used wall-maps in the school collection which show the growth of geographical knowledge, and also drew maps for their own use.

Lowell's *Columbus* and Tennyson's *Columbus* were read in class recitation. For other literature, see Miss Fleming's plan for Oral Reading.

In Colonial History we studied especially Massachusetts, Virginia, and New York as typical colonies of the different sections of the country. Our work followed two lines, one tracing the development of English ideas in this country and the other the effect of environment in shaping the growth of our institutions. The following topics suggest the order of work: Cause of settlement; character of colonists; geography of country occupied; influence of geography upon occupations; influence of occupations upon social life; government established; colonial industries; present economic conditions compared with those of colonial times.

In December, our subject will be the Revolutionary struggle. By study of the writings of the "fathers" we shall seek to discover the political ideas which animated them, and shall then compare those ideas with the political theories of our own time. Reading of Locke's second treatise on *Civil Government* will be made the foundation for this study.

Professional Class

The work of the professional class for this quarter is confined to preparation for teaching in the first three grades. This involves a careful study of the subject-matter, the adaptation of this subject-matter to the children, and such hand-work as will enable the students to teach the primitive industrial arts. They are working in clay-modeling and pottery, in spinning with the spindle and distaff and with the wheel, and in weaving with the simple hand loom, and they are making a loom of wood. They are also experimenting with stone tools, and later will undertake some work in metals.

References: Mason, *Origins of Invention* and *Woman's Share in Primitive Culture;* Joly, *Man before Metals* (especially good for the study of the Cave Man); Starr, *Some First Steps in Human Progress* and *Indian Life;* Morgan, *Houses and House Life;* Viollet-le-Duc, *Homes and Habitations of Man;* Keller, *Lake-Dwellers of Switzerland;* Figuier, *Primitive Man;* Dawkin, *Early Man in Britain* and *Cave-Hunting;* Evans, *Ancient Stone Implements;* Nadaillac, *Manners and Monuments of Prehistoric Peoples* and *Prehistoric America;* Morgan, *Ancient Society;* Tylor, *Primitive Culture, Early History of Mankind and Anthropology;* Ratzel, *History of Mankind;* Lubbock, *Prehistoric Times;* Rau, *Early Man in Europe;* Waterloo, *Story of Ab;* Butterworth, *Industrial Arts;* Hale, *Stories of Invention;* Parton, *Captains of Industry;* Knight, *Mechanical Dictionary;* Bigelow, *Useful Arts;* Lodge, *Pioneers of Science;* Hammersley, *Book of Illustrious Mechanics;* Chase and Blow, *Stories of Industry.*

Home Economics

Alice Peloubet Norton

The principle on which a course of cookery is based will vary with the object of the course, the age of the pupils, and their surroundings and interests. Whether the order is determined by the study of the food principles, by the different methods of cookery, or whether some other grouping is chosen, the work must be carefully adapted to the class. With the younger pupils the most logical course is not always the best. It is important to furnish a motive for the work which will give real interest in the beginning, and arouse the desire for investigation and experiment on the part of the child. With older pupils, as in the normal class, there is generally a strong motive present or the work would not be undertaken.

With the Fifth Grade children, who are studying the early colonization of the country, the native fruits and grains of the eastern coast have furnished a starting point. In the Seventh and Eighth Grades the motive was found in the preparation of a simple Thanksgiving luncheon to be served in French fashion, the pupils who act as waiters speaking French only.

In the other grades the work is in close connection with the nature study, beginning with fruits and cereals.

It was thought best at first that the training class should follow somewhat closely the order of work in the grades, but it was found better to give an independent course, and to take the preferred order of proteid before starch, instead of that indicated in November.

After the study of water and mineral matter the outline is as follows:

V. Proteids.

Composition. Use in body as tissue builders and as fuel foods. Discussion of reason why other fuel foods are needed. Testing of proteids with Millon's reagent, and with nitric acid and ammonia. Allied nitrogenous compounds: gelatine, extractives. Examination and testing of dried gluten previously obtained from flour. Other vegetable proteids, as legumin of peas and beans. Casein precipitated from milk by acid; making of sour-milk cheese. Casein precipitated by rennet, and the making of cheese curd and of junket.

Experiments with albumen, to determine its solubility in water, and its cooking temperature. Cookery of eggs; dropped, creamy, and in omelet.

VI. Fats.

Source. Comparison of animal and vegetable fats as to composition, cost, digestibility. Use in body as fuel. Effect of cooking on digestibility. Fat obtained from milk; churning of butter.

VII. Starch.

Composition; source; value as food; test. Digestibility of starch from different sources. Examination under microscope of starch grains from potato, corn, wheat. Effect of heat, as in popped corn. Effect of different degrees of heat conveyed by means of water. Comparative study under microscope of starch mixed with cold water, starch and water heated to 60° C.; starch and water boiled. Boiling of potato and rice, weighing each before and after cooking. Cookery of cereals.

VIII. Change of starch into sugar.

Change of starch into sugar by means of prolonged heat; by acid; by the action of saliva. Testing of different foods for sugar with Fehling solution. Test applied to cane sugar before and after heating with acid. Classification of carbohydrates. Sugar cookery.

The classification of foods given below is adapted from Goodfellow, and is chosen because of its simplicity. "Albuminoid" unfortunately is used in two senses by different authors, so that "gelatinoid" seems less confusing to the beginner.

Classification of Foods

- Inorganic (incombustible).
  - 1. Water.
  - 2. Salts or mineral matter.
- Organic (combustible).
  - 1. Nitrogenous.
    - (a) Proteids.
    - (b) Gelatinoids.
  - 2. Non-nitrogenous.
    - (a) Fats and oils.
    - (b) Carbohydrates.

The more important carbohydrates may be grouped as follows:

1. Glucoses ($C_6H_{12}O_6$).
    - Dextrose.
    - Levulose.
    - Galactose.
2. Sucroses ($C_{12}H_{22}O_{11}$).
    - Cane sugar.
    - Lactose, or milk sugar.
    - Maltose, or malt sugar.
3. Starches ($(C_6H_{10}O_5)_n$).
    - Starch.
    - Glycogen.
    - Dextrin.
    - Cellulose.
    - Gums.

References: F. L. Sargent, *Corn Plants*, Houghton, Mifflin and Co.; Halliburton, *Essentials of Chemical Physiology*, Longmans, Green and Co.; J. E. Peabody, *Laboratory Exercises in Anatomy and Physiology*, Henry Holt and Co.; *Rumford Kitchen Leaflets*, Nos. 7, 8, 9, 10, 11, 12, Rockwell and Churchill Press; *American Kitchen Magazine*, Vol. VII, p. 66, Home Science Publishing Company; Mary Hinman Abel, *Sugar as Food*, Farmers' Bulletin, No. 93, United States Government Bulletins.

Cooking in the Primary Grades

Flora J. Cooke

During December the children will study sugar. In the Fourth Grade they will find out where and under what general conditions sugar-cane, beets, and sugar-maple trees grow, and something of the different methods used in obtaining sugar from these sources. As aids in this work they will use selected library books and pictures, museum specimens, and simple experiments as indicated below. Each child will take some phase of the subject to investigate, and will summarize what he is able to find out upon his particular topic into some suitable form for presentation to his class.

This work will be supervised by the teacher and whenever possible the data thus gathered will be printed in the form of reading lessons for the class. Each reading lesson will be illustrated according to the taste of the one preparing it, his motive being at all times to make his points perfectly clear to his audience.

Some of the topics selected will probably be the planting, irrigation, fertilizing, and manufacture of sugar; the properties and characteristic uses of the different varieties of sugar; the study of recipes for the making of appropriate candies with and without heat.

A group of children will prepare a set of sugar samples for the museum illustrating stages of development in different kinds of sugar. These will be properly labeled and catalogued according to the information gained by the group during the month.

Another group may record their experiences in the uses of sugar in the preserving and seasoning of food. The exact phase of the work chosen will depend upon the interest, experience, and abilities of the children who must do the work. The cooking for the month will be confined to the making of simple candies for the Christmas reception. A record of all the experiments and investigations will be kept in the cook-books for reference and future use. The desire of the children to make good candy will sufficiently stimulate them to measure quantities accurately, and will require a continual exercise of each child's reasoning powers in the judging of temperatures, consistencies, and the proper conditions in cooking. After appropriate directions have been given, each child will make his own observations and work out his individual problem independently.

The experiments will depend entirely upon the questions of the children as they fail or succeed in their work. They will probably discover caramel and carbon in this work, and note the changes which take place in sugars when subjected to the action of heat. Simple experiments in the dissolving of sugar, evaporation of water, and conditions for crystallization will be performed by the children if they are necessary as explanation for the results observed. For the reasons stated above the exact experiments cannot be foretold.

The following is a list of reference books used in the study of sugar:

REFERENCES

Teacher's List

A Century of Sugar Making in Louisiana. Century Magazine, v. 13, p. 100-120.

Church—*Sugar* (see *History of Food*, p. 31-34). Chapman & Hall.

United States Department of Agriculture—*Sugar* (see Yearbook, 1898, p. 566-7).

Colorado—Experiment Station. Bulletin, Nos. 21, 42, 46, 51.

Idaho—Experiment Station. Bulletin, Nos. 12, 18.

Illinois—Experiment Station. Bulletin, No. 45.

Indiana—Experiment Station. Bulletin, No. 68.

Iowa—Experiment Station. Bulletin, No. 37.

Kansas—Experiment Station. Bulletin, No. 94.

Maryland—Experiment Station. Bulletin, No. 61.

Michigan—Experiment Station. Bulletin, Nos. 177, 179.

New York, Cornell University—Experiment Station. Bulletin, Nos. 18, 183.

North Dakota—Experiment Station. Bulletin, No. 5.

Ohio—Experiment Station. Bulletin, Nos. 99, 115.

Oregon—Experiment Station. Bulletin, No. 59.

Pennsylvania—Experiment Station. Bulletin, Nos. 40, 47.

South Dakota—Experiment Station. Bulletin, Nos. 56, 62.

United States—Agriculture, Department of. Farmers' Bulletin, Nos. 52, 73, 79, 92, 93, 113.

United States—Representatives, House of. Document, No. 699.

Vermont—Experiment Station. Bulletin, 26, 73.

Vermont—Annual Report, No. 11.

West Virginia—Experiment Station. Bulletin, Nos. 55, 64.

Children's Reading

Carpenter, *Visit to a Sugar Plantation* (see *History North America*, p. 143-150). American Book Co.

Chase and Clow, *Sugar* (see their *Stories of Industry*, v. 2, p. 135-9). Educational Publishing Co.

Kirby M. and Kirby E., *Sugar* (see their *Aunt Martha's Corner Cupboard*, p. 43). Flanagan.

Troeger, *The Maple* (see *History of Harold's Rambles*, p. 37-43). Appleton.

Warner, C. D., *Sugar Camp* (see Cyr Fourth Reader, p. 268-75). Ginn.

Art

John Duncan

During this month our attention will be turned to the planning of the costumes and accessories of the Christmas festival, and to the designing of Christmas presents. The art work of the High and Pedagogic Schools will center during this month about the banners to be used in the Christmas morning service. The banners will be embroidered with designs illustrative of sun myths referring to the conflict of light and darkness, of the gods of warmth and life with the demons of cold and death. The stories of Osiris, and Phœbus, and Baldur, and Cuchulainn, and Michael the Archangel, will lead up to the Christian conception. And these banners will be succeeded by a larger one illustrating the gospel story.

Our frontispiece is a sketch design for this larger banner, which will be executed in silk applique and embroidery.

The subject is the old and ever new theme of the Madonna and Child, and, whilst we follow to a certain extent the conventional planning of the picture, we have attempted to read into the old symbols a fresher meaning.

The most ancient and the newest faiths are suggested by the emblems of the rolling heavens and the world tree, the tree of life, of growth and evolution, showing forth the sustained miracle of creation, dropping its brown leaves, spreading its green ones, and forever sending out its buds. At its base are creatures wild and tame, and the hills and sea are around.

The humble primitive folk, the pioneers of the world's progress, the hunter and farmer, as well as the shepherd of the gospel story, lay their gifts at the feet of the coming man. And the civilizations of Asia and Africa and Europe, represented by the three wise men from the East, bring their contributions: Asia his philosophies and religions, his Bibles; Africa, who in Egypt set the type of ancient architecture and ornament, and in Morocco that of medieval times, brings his art, indicated here by the cathedral; and Europe, in the person of Julius Cæsar, presents his great conception of world citizenship.

The Madonna is the loving mother who looks to her boy to realize all that she has dreamed and failed to realize herself. All her aspirations are to be fulfilled in him. She it is who inspires the teacher with her own hope—the hope of a divine humanity. Athena-like, the teacher must supplement the child's vision with the mirror of knowledge, and arm his hand with the sword of skill for the conflict with the powers of darkness and dissolution, when he, like Osiris and Phœbus, and Michael the Archangel, must go forth to bring in at last the reign of gentleness and love, of peace on earth, good will to men.

Speech, Oral Reading, and Dramatic Art

Martha Fleming

The festival of the winter solstice celebrates the returning of the sun. Bound up with it are ideas of returning life, vigor, and joy. Up to this time the tide has been ebbing, now it begins to flow again. Darkness and death have been stealing on, shrouding and congealing all things. Now they begin to give way and are beaten back farther and farther by the growing strength of the sun's rays. A hope revives in us that Balder will come again. Cuchulainn awakes after his long sleep and stretches himself. Ormuzd has overcome his enemy Ahriman, Osiris is reborn; and at this season rises again the Sun of Righteousness, The Light of the World The Day Spring, The Bright and Morning Star, The Prince of Life. Christ comes to dispel the spiritual darkness of the world.

In our Christmas celebration we shall present the mythological stories in dramatic form, bringing out their substantial identity and spiritual unity, and showing that they answer a need of the human heart for some outward expression of its desire for life more abundant and a reassurance that life ever follows death. These early myths are prophecies, the dawn before the sunrise.

The children in costume and in procession will tell the stories and explain the emblems on the banners, which are embroidered with appropriate devices—the attributes of the gods and ornaments significant of the legends. This will be followed by the angels' songs of the first Christmas, and the story of the nativity of Christ, from St. Luke, Chapter II, verses 8 to 20, inclusive, and the Christmas hymn. Then will come a masque which will embody the ideas underlying the design of the Christmas banner, the heritage of thought and skill from the past, our hopes for the future, and our faith in the divine possibilities of every child.

During the next half-hour the parents and friends will examine the gifts made by the children. These will be arranged in the different rooms throughout the building, and when we come together again it will be around the Christmas tree, to sing the Christmas songs and tell of the Christmas customs in this and other lands.

In addition to the special work demanded by preparation for the Christmas celebration, the regular work in speech and oral reading will be continued.

This month an attempt will be made to give the interpretation of literature a definite place in the children's study and to follow it up systematically. It often happens that a great piece of literature bearing directly upon the subject of study, and of interest, is too difficult for the children to read for themselves, or even under direction; so the great thought-treasury of the world remains sealed to them unless unlocked by adequate interpretation. By means of interpretation something of the rhythm and of the beauty of thought and largeness of emotion will enter into the hearts and souls of the children. A feeling for the masterpieces of literature will be created, causing the children to return to them as to a cool spring whose waters they have once tasted. Speaking of the function of interpretation, some one has said: "You may read Hamlet or King Lear to yourself until the crack of doom and think that you understand it. Some day you hear a Booth or a Salvini speak the lines, and you have a new revelation of their beauty and significance." Dickens' *Christmas Carol* will be interpreted to the Fifth Grade. Parts will be omitted, but the story will be kept intact, and as far as the interpreter has power its beauty and spiritual truth will be presented to the children.

The following literature is suggested for the different grades as bearing closely upon their work. Some of these selections will be taken in each grade for drill.

Literature

First Grade: Study of Christmas in other lands and dramatic celebration of the different Christmas festivals.

The Birth of Christ, St. Luke, Chapter II, 8 to 20, inclusive.

Poems: *The Christmas Tree; The Tour of St. Nicholas; A Visit from St. Nicholas; Winter-time*, by Robert Louis Stevenson.

Second and Third Grades: Story of the Shepherd Dog, adapted from *Far from the Madding Crowd*, by Thomas Hardy; The Birth of Christ, St. Luke, Chapter II, 8 to 20, inclusive; The Three Wise Men and The Nativity, from *Ben Hur*, by Lew Wallace; *The Little Leaf*, Beecher; Dramatization of *Wild Animals I Have Known*, Seton-Thompson.

Fourth Grade: In addition to the work suggested for the Second and Third Grades Dickens' *Christmas Carol* will be read to the children.

Fifth Grade: *A Christmas Carol*, also *The Natural Bridge in Virginia.*

Sixth Grade: *The Demon of the Matted Hair*, and other stories from Hindoo myths; *The Pipes at Lucknow*, Whittier; reading and dramatization from *The Jungle Book*, Kipling.

Seventh and Eighth Grades: Continue *Horatius at the Bridge;* Cicero's *Oration Against Catiline;* begin the study of Julius Cæsar; *The Flight of Nydia*, from *Last Dnys of Pompeii*, Bulwer Lytton; *One Who Lived Long*

Long Ago, from *Giovanni*, Mrs. Frances Hodgson Burnett.

Tenth and Eleventh Grades: The Iliad as a whole will be presented to these grades, partly through the teacher's interpretation. Should the conditions be favorable, the Parting of Hector and Andromache will be studied for oral reading. Scenes from Racine's *Andromache* also may be studied. This class will continue the study of *As You Like It*.

Twelfth Grade: In connection with the study of American History the following literature is suggested for oral reading:

Miles Standish, Longfellow; *Paul Revere's Ride*, Longfellow; *Grandmother's Story of Bunker Hill*, Holmes; *Ballad of Cassandra Southwick*, Whittier; *Snow Bound*, Whittier; *Extracts from Hugh Wynne*, Weir Mitchell; continuation of the study and interpretation of *Hamlet*.

In the High School and Pedagogic Class each pupil will be required to present a short poem, a scene from a drama, or a prose selection to the class, the interpretation to be the result of his own study. In addition to this the Pedagogic Class will continue the study of spoken English, making special study of the child's methods of learning to speak.

The power of speech, facility and ease in utterance, and the habit of self-expression are necessary to free thinking, to distinct and vivid images. Expression clears the mental and moral atmosphere and makes for sanity and peace. The children and students have, through their efforts at self-expression in the class-room and morning exercises, discovered their own limitations and difficulties, and are ready for drill and study that will give them more freedom and effectiveness in speech. A person defective in any of the machinery by which thought is expressed orally, no matter how beautiful his thought nor how intense his desire to communicate with others, must fail in proportion as the organs of vocal utterance are defective or badly used.

Speech is a conventional language. Each child learns the language that he hears at his mother's knee by mere imitation. The mother tongue, whatever it may be, is what he brings to school. He has mastered its technique. If his speech is faulty, the first step in correcting it must be the hearing of correct speech; the second, the imitation of this speech. There is an accepted standard of English, the language spoken by our best educated people, and it is the aim to do away with provincialisms whether of the north, east, south, or west, and to make the speech conform to this standard. The dictionary is simply a record of the best usages, and after children are able to hear the different sounds and reproduce them the dictionary will be used as a help in pronunciation. The ear must become accustomed to correct sounds before the tongue can utter them. Professor Bell's vowel and consonant tables with key words are inserted, and after the sounds themselves have been learned from the living teacher these tables will be of great help. The vowels require the utmost precision of mold, because the slightest change in shape changes the quality of the sound. The consonants require accuracy, strength, and quickness in the use of the organs. Bad functioning of the organs often produces defective speech. A rigid jaw produces hard, set speech and an uncontrolled jaw loose, indefinite speech; an inflexible tongue, thick utterance; immobile lips, an indifferent expression; unresponsive cheeks, an inane sort of drawl. These difficulties are easily cured if there be no organic defect. There is no need that the deformity should be carried through life. Exercises for flexibility and control, difficult combinations and alliterations will be practiced until the vowels are given full value, and consonants are touched lightly and definitely. In this training we shall come into close touch with each child, and be able to help him over the difficult places.

In the following table are enumerated some of the causes of speech defects:

Table of Speech Defects

PREPARED BY MARTHA FLEMING

Class———

Name

General Health

Condition of Hearing

Action of Jaw and Lips and Tongue

Height of Palate

Width of Palate

Do the Teeth close properly? Are there other dental irregularities?

Cleft in Palate

Muscular Action of Pharynx in *k*, *g*, *ng*

Mouth Breathing

Condition of Tonsils

Adenoid Growths

Width of Nostrils and Bridge of Nose

Tongue-tie. Length of stretched tongue from distal end of frenum to tip

Are *t*, *d* and *n* articulated with tip of tongue?

Are there signs of baby talk?

Is there any hesitation or stammering?

Are there any incorrect habits of speech that the foregoing do not account for?

Wherever a defect is noticed special study will be made of the child, and when necessary individual training will be provided. Many defects can be remedied by care and practice, while others may call for the help of the dentist or surgeon. It is especially important that the little children should not be made self-conscious and unhappy by examinations, and undue attention to defects. They must remain as unconscious of themselves and of the speech organs as when lisping their first words at their mother's knee.

The function of speech is to communicate with others, to arouse thought by means of the spoken word. Under this impulse, which is the real oratorical impulse, little children speak out. They speak for a purpose. But in the artificial environment of the school-room the power is very soon lost. Even in ordinary conversation outside of the school-room sounds and syllables are slurred or run together in a manner which becomes utterly unintelligible a few feet away. Such mumbling is in most cases the result of inattention and neglect.

From the beginning the children should be trained to speak out, to give to the whole room what they have. They should be made to feel in every recitation that it is of interest not to the teacher alone, but to the whole room, and that it must be given to all. This does not mean that the voice should be strained by loud speaking. Clearness and distinctness of utterance and concentration and intensity of tone will carry the voice where loud and big sounding tone utterly fails. The simple habit of recognizing the rights of others, and of facing and addressing those to whom they speak, will go a long way toward bringing about distinct utterance. Children should learn to talk to others before they are asked to read orally.

BELL'S TABLES

VOWELS

1, eel.	14, pool.
2, ill.	13, pull.
3–1, ale.	12–14, pole.
4, ell.	11, Paul.
5, shall.	10, on, doll.
6, earl; 7, ask; 8, art;	9, up.
8–1, isle; 8–14, owl;	11–1, oil.

y 14, you.

CONSONANTS

	BREATH.	VOICE.	NASAL VOICE.
Lips	*p*,	*b*,	*m*.
	wh,	*w*.	
	f,	*v*.	
Point of tongue .	*t*,	*d*,	*n*.
	s,	*z*.	
	th^2,	th^1.	
	r^2,	r^1.	
	l^2,	l^1.	
Top of tongue . .	*sh*,	*zh*.	
	y^2,	y^1.	
Back of tongue .	*k*,	*g*,	*ng*.
	h,		glide *r* (-*r*).

CONSONANT COMBINATIONS

j or soft *g*	*d*, *zh*.
Long *u*	y^{14}.
ch	*t*, *sh*; *sh*, *k*.
qu	*kw*.
ph	*f*.
x . .	*z*. *gz*. *ksh*. *ks*.
c . .	*s*. *k*. *z*. *sh*.

Use of Bell's Vowel Table with Webster's Dictionary

ā, long, as in āle, fāte, chāmber, grāy = 3—1.
ă, short, as in ădd, făt, hăve, răndom = 5.
ē, long, as in ēve, mēat, pēace, sēizure = 1.
ĕ, short, as in ĕnd, mĕt, chĕck, lĕopard = 4.
ī, long, as in īce, fīne, mīre, thrīve = 8—1.
ĭ, short, as in ĭll, fĭn, admĭt, trĭbute = 2.
ō, long, as in ōld, nōte, lōaf, depōse = 12—14.
ŏ, short, as in ŏdd, nŏt, tŏrrid, resŏlve = 10.
ū, long, as in ūse, tūbe, lūte, feūdal = y14.
ŭ, short, as in ŭs, tŭb, bŭt, stŭdy = 9.
ȳ, long, as in flȳ, stȳle, skȳ, edifȳ = 8—1.
y̆, short, as in cy̆st, ny̆mph, ly̆ric, aby̆ss = 2.

OCCASIONAL SOUNDS. 1.

â, as in âir, shâre, pâir, beâr = 4.
ä, Italian, as in ärm, fäther, fär, pälm = 8.
ȧ, as in ȧsk, grȧss, dȧnce, brȧnch = 7.
a̤, broad, as in a̤ll, ta̤lk, ha̤ul, swa̤rm = 11.
ạ, like short o, as in whạt, wạnder, wạllow = 10.
ê, like â, as in êre, thêre, hêir, whêre = 4.
ẹ, like long a, as in ẹight, prẹy, obẹy = 3—1.
ẽ, as in ẽrmine, vẽrge, prẽfer = 6.
ï, like long e, as in pïque, machïne, polïce = 1.
ĩ, like ẽ, as in ĩrksome, vĩrgin, thĩrsty = 6.
ȯ, like short u, as in ȯther, dȯne, sȯn, wȯn = 9.
o̤, like long oo, as in pro̤ve, do̤, mo̤ve, to̤mb = 14.
ọ, like short oo, as in bọsom, wọlf, wọman = 13.
ô, like broad a, as in ôrder, fôrm, stôrk = 11.
o͞o, as in mo͞on, fo͞od, bo͞oty = 14.
o͝o, as in wo͝ol, fo͝ot, go͝od = 13.

OCCASIONAL SOUNDS. 2.

ṳ, preceded by r, as in rṳde, rṳmor, rṳral = 14.
ụ, like short oo, as in bụll, pụt, pụsh, pụll = 13.
û, as in ûrge, bûrn, fûrl, concûr = 6.
e, *i*, *o* (Italic) mark a letter as silent. Fall*e*n, tok*e*n, cous*i*n, mas*o*n.

REGULAR DIPHTHONGAL SOUNDS.

oi, or oy (unmarked), as in oil, join, moist, oyster, toy = 11—1.
ou, or ow (unmarked), as in out, hound, owl, vowel = 8—14.

CONSONANTS.

ç, soft, like s sharp, as in çede, çite, merçy, acçept = s.
c̶, hard, like k, as in c̶all, c̶onc̶ur, suc̶cess = k.
ch (unmarked), as in child, much, touching = t, sh.
çh, soft, like sh, as in çhaise, marçhioness, maçhine = sh.

ꞓh, hard, like k, as in ꞓhorus, epoꞓh, distiꞓh = k.
ḡ, hard, as in ḡet, tiḡer, beḡin, foḡḡy = g.
ġ, soft, like j, as in ġem, enġine, eleġy, suġġest = d, zh.
s, sharp (unmarked), as in same, yes, dense, rest = s.
ş, soft, or vǫcal, like z, as in haş, amuşe, prişon, reşide = z.
th, sharp (unmarked), as in thing, breath, sympathy = th².
ŧh, flat or vocal, as in thine, smooth, wither = th¹.
ng (unmarked), as in sing, singer, single = ng.
n̲, as in lin̲ger, lin̲k, un̲cle = n.
x̱, like gz, as in ẹx̱ist, ex̱ample, aux̱iliary = gz.
ph, like f (unmarked), as in phantom, sylph, philosophy = f.
qu, like kw (unmarked), as in queen, conquest, inquiry = kw.
wh, like hw (unmarked), as in what, when, while = wh.

Music

Helen Goodrich Bertha Payne

The principle of working out continually through the interest of the song has been illustrated in the notation work during the past month. Drill on this point has sprung out of the rote-singing in the first five grades. The very inadequate conception of intervals in these grades led to an attempt at pointing out approximately with the hand the distances up and down, while singing; then in the first grade, to a quick placing of marks on the board with the side of a piece of chalk an inch long, following the direction and distances of the intervals up and down, in the rhythmical movement of the song. This proving still too indefinite (as shown by the results when the children were required to make the steps themselves), the staff was resorted to, with success. The more logical and exact children were aided perceptibly by the definite relations brought out on the staff. The names of the clef, and the meaning of the time-signature and bars, were asked for by the children, and these were explained to them. They will be mentioned every time there is an opportunity, until the children are familiar with them as with other new words. They will also be written upon the board.

The Second and Third Grades found much fun in one of the simplest songs in the Primer, and sang it very dramatically. One day the tune was upon the board when the lesson began. The children noticed it, and the teacher pointed to the notes, one after another, in the rhythm of the song. The children recognized it with great glee, one after another, and each one pointed it out, keeping the rhythm perfectly. Thus the time was made more definite, and with the same effort, some familiarity with the staff was acquired.

These instances are given in detail to show the general direction which the work has taken in the matter of gaining technical knowledge. Whatever is necessary in points of technique will be arrived at through the need of the moment, the need of preparing the song to please some one else, to make one's self intelligible, to render the song as beautifully as possible, if for nothing else, for the mere fun of giving a riddle to some one else. Looking toward these ends, also, the songs capable of dramatization are acted out; a child who is especially inexpressive is invited to sing a verse of a song on *la*, without the words, and let the class guess which verse he is thinking of by the expression; a child who enunciates badly takes pleasure in trying to make the class understand by the movement of his lips a verse of a song, without making a sound.

Further attempts at developing a more beautiful and more varied sense of rhythm are being made. The Second and Third Grades quickly learned to walk in a circle to 6-8 time, and the movement was perceptibly smoother than the ordinary walk, and entirely divested of the slight jerking produced by the ordinary march. It is believed that a beautiful class of dance music, marches, and some of the best ballet-music, which will be used in the Gymnasium this month, will react favorably upon the singing.

The interest in the High School is centering around the intellectual side of the singing at present, in the consideration of text, and in a general way its interpretation by the composer. Songs have been selected which have texts of good literary quality, and sometimes historical or ethical value, and much emphasis has been laid upon these collateral interests. The dignity of singing needs to be clearly brought out among pupils of the High School age. Technical points (such as exactness of attack, which demands great concentration; correctness of pitch, involving discrimination in listening; and clear enunciation, made necessary by the value of the text) have been dwelt upon to some extent. The need of improving morning exercises has been one motive for this work.

The Statue, in Songs of Life and Nature, created interest in the character of St. Francis of Assisi in the High School, and the Twelfth Grade is preparing a morning exercise with this song as the animus. A sympathetic account of St. Francis may be found in the *Handbook of Legendary Art*, by Mrs. C. E. Clement, p. 109.

Preparations for Christmas will begin with discussions of all texts. There will be help from the Department of Oral Reading in this work, and the songs will be sung to the children in little recitals.

Special group-work will be done upon the songs mentioned under this head. A class selected from the High and Pedagogic Schools will sing the canon for women's voices by Reinecke, *Christmas Carol*, in Songs of Life and Nature.

The old English carols will be sung by a group of girls and boys costumed as "*Waits*." The plan is to keep this as far as possible a secret among the Waits themselves and to go about at unexpected times and sing to different people in the school, and perhaps otherwheres. The costumes selected are of the time of Queen Elizabeth. They consist of scant plain skirts for the girls, full-sleeved waists, with kerchief and tight-fitting caps, white cuffs, and long capes. The boys will wear full knickerbockers, broad white cuffs and collars, long capes, and broad-brimmed peaked hats. They will carry lantern, staff, and music.

Zu Bethlehem Geboren is one of the most beautiful of the multitude of beautiful German Christ-Child songs. It will be sung by the German classes. The accompaniment must be played very smoothly and the swinging rhythm carefully preserved.

The list of songs appended contains a considerable variety from which to choose, and is graded approximately, though it is of course impossible to estimate musical capacity by grades.

Singing, Pedagogic Class

This class has been gaining steadily in the production of pure tone and in breath control, and is now more ready for song study. The Christmas songs outlined for the grades will be studied. First, as types of good music; second, to discover thei suitability to the children in text and music; third, as a point of departure for the mastery of truer expression by the students themselves.

I. METHOD: The class will be divided into two groups. Each group will assist the other by suggestions. The song will be sung by one group. The members of this same group will criticise their own performance, and then sing again. The listening group will offer its suggestions, which will be acted upon if accepted. Then the listening group will take its turn in singing. This gives not only a reasonable drill in technique, but also gives training in the kind of discrimination needed in teaching or in leading children's singing.

II. POINTS FOR DISCRIMINATION: (1.) Enunciation and pronunciation. Watch the formation of the perfectly molded vowels. The consonants at the beginning of words are apt to be prolonged, spoiling the tone and the vowel form. The premature anticipation of the closing or final consonant has an equally bad effect.

(2.) Attack: Hold the true image of the pitch of the tone before sounding it. Command of breath-stream from the diaphragm will help to relieve throat-tension that comes at first when one strives for a perfect attack of the tone.

(3.) Connection of tones: One great defect in most singing is the slurring of one tone up or down to the next, sliding over the interval. A great beauty is secured when the breath-stream flows steadily, words are spoken easily, and even tones are joined closely as may be, with no suspicion of dragging up or down from one pitch to the next. All these good habits once formed, the channels are opened for beautiful expression.

Songs

Kindergarten: *Christmas Song*, Frederic W. Root, December COURSE OF STUDY; *Green Holly Boughs*, Songs for Little Children, No. 2, Eleanor Smith; *In Another Land and Time*, Songs for Little Children, No. 1, Eleanor Smith; *Story of the Christ*, *Christmas Lullaby*, and *Jack Frost*, Song Stories for Kindergarten, Patty Hill; *The Snowflakes*, Songs of the Child World, Mrs. Gaynor; *Jack Frost*, Songs for Little Children, No. 1, Eleanor Smith.

First, Second, and Third Grades: *Christmas Song*, Frederic W. Root, December COURSE OF STUDY; *Green Holly Boughs*, Songs for Little Children, No. 2, Eleanor Smith; *In Another Land and Time*, Songs for Little Children, No. 1, Eleanor Smith; *Old Christmas*, Modern Music Series, Second Book, Eleanor Smith; *Father Christmas*, Modern Music Series, Primer, Eleanor Smith; *The North Wind Doth Blow*, Mother Goose and Nursery Rhymes, J. W. Elliott; *Winter Time*, Modern Music Series, First Book; *This is the Way the Snow Comes Down*, Children's Songs and How to Sing Them, W. L. Tomlins; *Summer or Winter*, *An Explanation*, *A Sleigh Ride*, *Earth's Dresses*, Modern Music Series, Primer.

Fourth and Fifth Grades: *Christmas Bells*, Niels Gade, text by Hans Christian Andersen, December COURSE OF STUDY; *Christmas Carol*, (Old English words), Modern Music Series, First Book, Eleanor Smith; *Christmas Bells*, (text by Longfellow), Modern Music Series, Second Book, Eleanor Smith; *Ye Shepherds Arise*, Reinecke, Fifty Children's Songs; *St. Christopher*, Mrs. Crosby Adams, December COURSE OF STUDY; *God Rest You, Merry Gentlemen*, Old English, December COURSE OF STUDY; *Winter Song*, Modern Music Series, First Book, Eleanor Smith; *Old Christmas*, Modern Music Series, Second Book, Eleanor Smith.

Sixth, Seventh, and Eighth Grades: Same as Fourth and Fifth, with the addition of *Christmas Day* (text by Susan Coolidge), Modern Music Series, Third Book, Eleanor Smith, and *The Christmas Tree*, Eduard Grieg (Augener and Co. Edition).

High School: *Christmas Bells*, *Christmas Day*, Modern Music Series, Third Book; *Christmas Bells* (text by Longfellow), Modern Music Series, Second Book, Eleanor Smith; *Christmas Bells*, Niels Gade (text by Hans Christian

Andersen), December COURSE OF STUDY; *Christmas Day* (text by Susan Coolidge), Modern Music Series, Third Book, Eleanor Smith; *The Star of Joy*, *A Christmas Carol*, *Christmas Song*, *Gather Round the Christmas Tree*, Songs of Life and Nature, Eleanor Smith; *The Christmas Tree*, Eduard Grieg (Augener and Co. Edition); *In the Tempest*, Modern Music Series, Third Book, Eleanor Smith.

The Pedagogic Class will sing songs selected from the list of those taught in the Academic School.

Special Group Work: *God Rest You, Merry Gentlemen*, and *The First Nowell*, December COURSE OF STUDY; *Christmas Carol*, Carl Reinecke (text by Hans Christian Andersen), Songs of Life and Nature, and July COURSE OF STUDY; *Zu Bethlehem Geboren*, December COURSE OF STUDY.

French

Lorley Ada Ashléman

In the October and November numbers of the COURSE OF STUDY the story of the introduction of potatoes into France was printed. The children wrote a little essay upon the story, and naturally wanted to know why, in the word "pommes de terre," the first substantive, "pommes," took the mark of the plural instead of the last. A discussion on the formation of the plural in compound and simple substantives was thus initiated, and later the pupils wished to have an exercise given them to show whether they really understood the subject. The following reading lesson embodies the questions of the children and the rules arrived at in response to them. Next comes a selection concerning the departure of an Indian tribe, chosen because the children are now studying the French explorers and the Indians. In this selection, the nouns are purposely put in the singular, to test the pupil's ability to form the plural.

In November the older children studied the constellation of Berenice in connection with their ancient history and astronomy. Therefore the story of *Berenice's Hair Among the Stars* is given them.

The grammar grades will be at work preparing Christmas gifts in the Manual Training room, and their directions will be frequently given in French; they will be encouraged to respond in the same language as far as possible. For their reading, they will dramatize a French Christmas. They will talk over the French customs, write about them, and from these writings make the little play they will present.

French Reading Lesson

Robert. Mlle., pourquoi *terre* ne se met -il pas au pluriel dans le mot pomme de terre que nous rencontrons si souvent dans cette histoire; "Aventures des premières pommes de terre en France?"

Hier en parlant des légumes que nous avous vus chez le marchand nous avons écrit chou au pluriel et fleur au pluriel. Je me souviens aussi d'avoir ajouté une *S* à *chef d'œuvre* en parlant des *chefs d'œuvre* du temps de Louis XVI.

Mlle. Guinand. Robert, votre question vient apropros. Le bon sens doit décider de cette question. Voyons! avons nous une *terre* ou *deux terres?*—une n'est-ce pas? Nous avons pourtant plusieurs *pommes.* Il s'en suit que c'est le mot *pomme* qui prend la marque du pluriel. Quand un nom composé est formé de deux noms réunis par une préposition, le premier nom seul prend la marque du pluriel.

Dans le mot *chou-fleur* vous avez deux

substantifs chou et fleur, l'un qualifie l'autre. En français l'adjectif s'accorde avec le substantif. Il faut bien mettre tous les deux au pluriel. Vous écrivez donc le chou-fleur (singulier); les choux-fleurs (pluriel).

C'est clair?

Robert. Je vous comprends trés bien, Mlle. C'est á dire que si ce mot est formé de deux substantifs, dont l'un qualifie l'autre, ils prennent tous les deux la marque du pluriel.

Je puis aussi dire alors que si le mot est formé d'un substantif et d'un adjectif, ils prennent l'un et l'autre la marque du pluriel. Donc j'écris *la basse-cour* (singulier); les basses-cours (pluriel).

Mlle. Guinand. Parfaitement.

Hélène. Mais alors, Mlle., dans le cas où le mot composé est formé de deux substantifs et que l'un ne qualifie pas l'autre que faut il bien faire?

Mlle. Guinand. Voilà Hélène une petite difficulté, il vous faut analyser le mot composé.

Prenons le mot *Hôtel-Dieu;* qui signifie hôtel de Dieu (il n'y a qu'un Dieu); au pluriel des *hôtels de Dieu.* Ecrivons donc des *hôtels-Dieu.* Quand il y a des mots sous-entendus, on les rétablit par la pensée.

Colin-maillard, jeu où Colin court après maillard. Donc un colin-maillard; des colin-maillard.

Appui-main, baguette qui sert d'appui à la main. Ecrivez, un appui-main; des appuis-main.

Un pot au feu; des pot au feu (des morceaux de viande dans un pot sur le feu.

Jean, que voulez-vous savoir?

Jean. D'après votre raisonnement c'est bouchon qui prend la marque du pluriel dans le mot composé *tire-bouchon.* Le tire-bouchon; les tire-bouchons, parceque tire est un verbe.

Mlle. Guinand. Bravo, Jean, vous avez raison! Si le mot est, composé d'un substantif et *d'un verbe,* le substantif seul prend la marque du pluriel, sans tenir compte de l'idée de pluralité contenue dans le mot composé.

Prenez la craie, Jean, allez au tableau-noir et écrivez le mot composé *un contre-ordre* au pluriel.

Jean. Voici, Mlle., un contre-ordre (sing.); des contre-ordres (plu.)

Mlle. Guinand. C'est bien, mais pourquoi n'avez-vous pas ajouté une *S* a contre.

Jean. Parceque, Mlle., contre est un mot invariable, et si j'analyse le mot je puis voir que si le mot composé est formé d'un mot invariable et d'un substantif, le substantif seul prend la marque du pluriel.

Vous n'y voyez pas encore clair, Hélène?

Hélène. Si, Mlle., pourtant je voudrais bien faire quelques exercises sur la formation du pluriel des noms composés, malheureusement je ne comprends pas encore bien les règles pour la formation du pluriel d'un substantif en Français. Veuillez, Mlle., nous les indiquer. Alors vous nous ferez faire un devoir sur la formation du pluriel des substantifs et un autre exercise sur la formation des noms composés.

Mlle. Guinand. Jeme rappelle, Hélène, que vous étiez absente la semaine passée. Nous avons étudié ces règles à l'occasion de notre course au marché "South Water."

Robert, veuillez bien expliquer ces règles à Mlle. En attendant et tout en vous écoutant j'essayerai de mettre les devoirs sur le tableau-noir.

Robert. A votre service, Mlle. Je ferai de mon mieux.

I. On forme le pluriel d'un mot, en ajoutant un s au singulier.

Ex. Le père, les pères.

II. Les noms terminés au singulier par s, x, z, ne changent pas au pluriel.

Ex. Le fils, les fils; la voix, les voix; le nez, les nez.

III. Les noms terminés au singulier par *au*, *eau*, *eu*, prennent un x au pluriel.

Ex. Le noyau, les noyaux; le bateau, les bateaux.

IV. Sept noms terminés au singulier par *ou* prennent aussi *x* au pluriel; ce sont: bijou qui font au pluriel bijoux; caillou, cailloux; chou, choux; genou, genoux; hibou, hiboux; joujou, joujoux; pou, poux.

Tous les autres noms en *ou* prennent une s au pluriel: Un clou, des clous; un verrou, des verrous.

V. Les noms terminés au singulier par *al* changent au pluriel *al* en *aux*.

Ex. Le mal, les maux; le cheval, les chevaux.

Cependant quelques noms en *al* prennent tout simplement une *s* au pluriel; ainsi: le bal, les bals; le carnaval, les carnavals; le chacal, les chacals.

VI. Les noms terminés au singulier par *ail* changent au pluriel *ail* en *aux*. Ex. Le bail, les baux; le soupirail, les soupiraux.

Cependant quelques noms en *ail* prennent tout simplement une s au pluriel, tels sont; l'éventail, les éventails; le détail, les détails; le gouvernail, les gouvernails; le portail, les portails.

M'avez-vous compris, Mlle.?

Hélène. Très bien, Monsieur Robert, je vous remercie mille fois.

Départ d'une Tribu Indienne.

Mettre au Pluriel les Mots en Italique.

A la fin de l'anné, 1831, je me trouvai sur la rive gauche du Mississippi, à un lieu nommée par les *Européen* Memphis. Pendant que j'étais en cet endroit, il y vint une troupe nombreuse de *Choctaw*: ces *sauvage* quittaient leur pays et cherchaient à passer sur la rive droite du Mississippi, où ils se flattaient de trouver un asile que le gouvernement Américain leur promettait. On était alors au coeur de l'hiver, et le froid s'évissait cette année-là avec une violence inaccoutumée; la neige avait durci sur la terre, et le fleuve charriait d'énormes *glacon*. Les *Indien* menaient avec leurs *famille;* ils traînaient à leur suite des blessés, des *malade*, des *enfant* qui venaient de naître, et des *vieillard* qui *allaient* mourir. Ils n'avaient ni *tente*, ni *chariot*, mais seulement quelques *provision* et des *arme*. Je les vis s'embarquer pour traverser le grand fleuve, et ce spectacle solennel ne sortira jamais de ma mémoire. On n'entendait parmi cette foule assemblée ni *sanglot* ni *plainte;* ils se taisaient. Leurs malheurs etaient anciens et ils les sentaient irrémédiables. Les *Indien* étaient dejà tous entrés dans le vaisseau qui devait les porter, leurs *chien* restaient encore sur le rivage: lorsque ces *animal* virent enfin qu'on allait s'éloigner pour toujours, ils poussèrent ensemble d'affreux *hurlement* et s'elançant à la fois dans les *eau* glacées du Mississippi, ils suivirent leurs maîtres à la nagé.

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Les *chouette* et les *hibou* se tiennent cachés le jour dans les *fente* des *rocher*, dans les *cavité* des vieilles *muraille*, ou dans les *trou* qu'ils creusent aux-mêmes, enfin dans tous les *lieu* où ils peuvent fuir la lumière.

Le vent qui fait plier les humbles *abrisseau* rompt *les chêne* superbes.

Les *enfant* préfèrent les *joujou* à tous les *joyau* du monde.

Les *coucou* pondent dans les *nid* des autres *oiseau*.

On ne met pas la pensée sous les *verrou*.

Les plus beaux *bijou* d'une mère sont ses *enfant*.

Les *cave* sont éclairées par des *soupirail*.

Les *carnaval* de Venise sont les plus brillants du monde.

Les *régal* continuels nuisent à la santé.

Quand le bouillon est gras il a beaucoup *d'œil*.

Les *ciel de lit* sont peu connus en Amérique.

Nos *neveu* nous traiteront comme nous aurons traité *nos aïeul.*

Les œil-de-bœuf de la cour du Louvre sont ornés de *sculpture.*

Il faut quelquefois réfléchir beaucoup avant de prononcer les *oui* et les *non.*

Répondez avec vérité aux *pourquoi* des enfants.

Au temps de Pâques les *alleluia* retentissent dans toutes les églises de Paris.

Les *concerto* ont été imaginés pour faire briller les grands artistes.

Les *cicerone* sont des guides qui montrent aux étrangers les *curiosité* d'une ville.

Les bons *ténor* et les bons *soprano* nous ouvrent souvent les portes du Paradis.

Les *agenda* sont de petits livres destinés à noter les choses qu'on doit faire.

Les *alto* sont des instruments à quatre cordes, plus grands que les *violon.*

Les faiseurs de *quolibet* sont *détestable.*

C'est Mazarin qui fit représenter à Paris les premiers *opéra.*

On met souvent ses meilleurs *pensée* dans les *post-scriptum.*

L'Espagne est la terre classique des *autodafé,* des *san-benito* et des *in pace.*

Le rosaire est composé de cinquante *ave* et de quinze *pater.*

Les *lazzi* sont une suite de mouvements et de gestes qui forment une action muette.

Les *fac-similé* sont l'exacte imitation d'une écriture.

Les *lazarone* sont les mendiants de Naples.

La Chevelure de Bérénice Parmi les Astres

Bérénice était la femme de Ptolémée III Evergète, roi d'Egypte.

Vers l'an 246 avant notre ère, le roi d'Egypte Ptolémée III Evergète, avait entrepris une expédition en Assyrie, sa jeune femme Bérénice, qu'il venait d'épouser récemment, s'engagea par un vœu à couper une boucle de ses cheveux et à la consacrer dans un temple, si les dieux ramenaient à Alexandrie son époux Vainqueur, la guerre s'étant terminée d'une façon heureuse et Evergète rentré sain et sauf dans son royaume, Bérénice s'acquitta envers les immortels. Au même moment, un astronome célèbre du Musée *Conon* signala une constellation qu'on n'avait pas encore observé, on s'écria que la boucle de cheveux de la reine avait été transportée au ciel et métamorphosée par la volonté de Vénus; Conon plaça la chevelure de Bérénice parmi les astres. Ce fut un grand événement à la cour à Alexandrie.

Noël *

Les cérémonies de Noël ont toujours exprimé la jouissance, et cette gaieté s'est traduite d'une façon plus ou moins originale. Le peuple a toujours chanté les Noëls, cantiques vérifiés en patois ou en langue vulgaire, et qui sont remarquables à force de simplicité et de naïveté. La valeur poétique des Noëls est presque nulle. Ils sont aussi rustiques que les bergers qui sont censés de les chanter.

Dans le midi de la France, la fête de Noël est l'objet de manifestation toutes spéciales qui rappellent singulièrement certaines usages idolâtriques.

La veille de la Noël, on ouvre la fête par le grand souper.

La table est dressée devant le foyer où petille, couronné de lauriers, la cariguie, vieux tronc d'olivier séché et conservé avec amour, pendant toute l'année, pour la triple solennité de la Noël.

Mais avant de s'asseoir à la table, on procède à la bénidiction du feu, pratique qui sent de l'idolâtrie.

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* For French Christmas Song, see p. 374

Le plus jeune enfant de la famille s'agenouille devant le feu et le supplie, sous la dictée paternelle, de bien réchauffer pendant l'hiver les pieds frileux des petits orphelins et des vieillards infirmes, de répandre sa clarté et sa chaleur dans toutes les mansardes proletaires, et de ne jamais dévorer l'éteule du pauvre laboureur ni le navire qui berce les navigateurs au sein des mers lointaines. Puis il bénit le feu, c'est à dire qu'il l'arrose d'une libation de vin cuit, à laquelle le vieux tronc d'olivier répond par des crépitations joyeuses.

Puis on se met à table.

Aprés le souper on se réunit en cercle autour du foyer et on chante des Noëls jusqu'à minuit, heure à laquelle on se rend en masse à la première messe.

Pendant toute cette nuit, les pauvres sont autorisés à mendier publiquement en chantant des cantiques.

Les enfants leurs jettent par les fenêtres leur aumône dans des bourses de papier qu'on allume par un bout, pour faire voir où elles tombent.

La Veille de Noël

La scène: Une maison illuminée à deux étages.

Au premier, derrière les rideaux on voit un bel arbre de Noël.

La neige tombe.

Les chanteurs de Noël arrivent.

Trois garçons représentent les trois mages de l'Orient.

Une fillette représente la Dame de Noël.

Voici le costume des mages: Une chemise blanche, une ceinture en couleur, un chapeau fait de carton recouvert de papier blanc, culotte en toile bleu.

Ils portent de longues barbes blanches. La Dame de Noël porte une longue robe blanche bien simple, et un voile blanc.

Un chanteur tient une cloche à la main.

Il sonne (la Dame de Noël est toujours annoncée par la cloche).

Alors toute la bande se met à chanter.

Les fenêtres s'ouvrent.

Les enfants de la maison se montrent.

Ils jettent par les fenêtres des aumônes dans des bourses de papier qu'on a allumé par un bout.

German

Siegfried Benignus

The instruction of the last two months in all classes has had for its aim the acquisition of a correct pronunciation by continually illustrating the base of articulation for German vowels and consonants. As a rule, the tongue lies quietly spread in the cavity of the mouth, touching the lower incisors in front; when this is not the case, a fixed and definite position is necessary for the production of special consonant sounds, as *c*, *l*, *r*, *z;* the concave form, indispensable for English, therefore disappears, as well as the forward projection of the lower jaw and the lateral muscles on the front side of the neck; the buccal cavity is wider; the action of the lips is greater; with the vowels *o*, *u*, *au*, *ö*, *ü*, *äu*, *eu*, the lips must be pursed; with the vowels *e*, *i*, *ai*, *ei*, the corners of the mouth must be drawn horizontally backward.

Since the pronunciation of the pupils who have learned German in public schools or under private tutelage has in some cases been found faulty, nay, even wrong, a continuous exercise will be devoted throughout the year to German pronunciation according to the most advanced phonetics.

FIFTH GRADE. The "Direct Method,"

used for all classes in the Chicago Institute, calls into play all the senses of the pupil in a wider and more harmonious way, so that a close correlation with the other branches of study has been effected from the very beginning. The basis for all instruction is the "Anschauungslehre" (instruction by means of objects), to develop the intuitive powers, to the end of acquiring the knowledge of German through the direct contemplation and intuitive study of objects, and of suitable pictures, through excursions to the parks of Chicago and its nearer environs. The simple questions, for instance: *Was* (*wer*) *ist das? Ist das die* (*eine*) *Wandtafel? Wo steht das Katheder? Wo liegt der Fussboden? Wo hängt die Lampe? Wieviel ist 9 und 8? Wieviel ist 12 weniger 9?* and their answers are written in books kept for this special purpose, and are impressed on the mind through the pupil's acting frequently in the role of teacher of his classmates.

The topics of study in October and November have been: Name and place of objects in the school-room, name of the trees in Lincoln Park; grammar: singular and plural; definite and indefinite articles; arithmetic: cardinal numerals from 1 to 20; exercises in addition and subtraction; writing and reading in the German alphabet. The work for December will be: (a) Continuation of the topics for October and November, the number of the objects in the school-room; (b) grammar: the same as during the last two months, and sentences involving the present tense of "sein"; (c) arithmetic: exercises in addition and subtraction from 1 to 40; (d) further appropriate exercises in writing and reading; (e) the most familiar and simplest salutations, for example, *Guten Tag, Guten Morgen, Guten Abend!*

Miss Goodrich, the teacher of music, has taught the pupils of this and the other grades the cradle song, *Nun schlaf, mein liebes Kindelein.* In December the Christmas carol, *Zu Bethlehem geboren ist uns ein Kindelein,* will be sung.

Sixth, Seventh, Eighth Grades form one class this year. As the knowledge of German acquired in divers ways is varied and generally deficient, the instructor is forced to keep carefully in view individual defects. Here, as in all classes, explanations are made, as far as possible, in German. English is not, however, proscribed when by its use the pupil's ideas can be made clearer and more accurate; it has nevertheless a secondary office to perform. Pupils must give their answers in German, and, moreover, in complete sentences.

A description of autumn, with suitable questions and answers, has served as a specimen of composition (Aufsatz) illustrating the structure of simple cardinal sentences, the principal uses of punctuation, the formation of the plural, exercises in declension and conjugation. Walks to Lincoln Park have made the pupil familiar with plants and trees, thus coördinating his work with the study of plants. Writing exercises in small German letters have been given frequently. Great attention has been paid to easy German reading exercises, as the pupils' skill in reading was found to be very low. For memory work has served the simple autumn song, *Ade, du schöne Sommerzeit.* In all classes, throughout the year, especial stress will be laid upon the memorizing of carefully selected prose and verse, thus enlarging with comparative ease the pupils' vocabulary and their acquaintance with idiomatic expressions.

The work for December will be (a), a description of the Rhine for composition work; (b), further exercises in the structure of principal sentences, formation of the plural, declension, conjugation of auxiliary verbs, relative clauses, punctuation; the general appearance of Lincoln Park in winter; (d), writing exercises in the simpler capital letters; (e), suitable reading exercises; (f), customary salutations; (e), memorizing of the first stanza of the folk song (Volkslied) *Der Tannenbaum:*

O Tannenbaum, o Tannenbaum,
Wie treu ſind deine Blätter!
Du grünſt nicht nur zur Sommerzeit,
Nein, auch im Winter, wenn es ſchneit.
O Tannenbaum, o Tannenbaum,
Wie treu ſind deine Blätter!

HIGH SCHOOL. The first and second-year pupils form one class. With these pupils the acquirements in German are also very faulty; not all of them are acquainted even with German script. Therefore special writing exercises have been and will be kept up. The still fuller description of autumn than in the grammar school has given a great opportunity for a drill in declension, conjugation of regular and irregular verbs, orthography, punctuation.

The subject for composition work for December will be the Rhine, associating the study particularly with geography and history, strengthening and enlarging the former work in grammar. Through walks in Lincoln Park, the pupils have been instructed in the knowledge of its plants and animals. December will show them the winter scenery of the park. For a correct, fluent, and expressive reading, Andersen's *Bilderbuch ohne Bilder* has been selected as most suitable to the capacity and experience of the pupils. Andersen, though not a German, in all his works displays the genuine Germanic spirit, full of refined tenderness and depth of feeling. The little German sketches, "What the Moon Saw," in the *Picturebook Without Pictures*, are free from the archaisms found in the fairy tales by the Grimm Brothers, and illustrate the easy though suggestive language of every-day life. The numerous illusions to facts from literature, arts, geography, history, ethnology, archæology, are peculiarly adapted to awakening the pupil's interest for scientific subjects. The memory work for October and November has been the autumn song "*Kahl sind Wälder und Gesträuch.*"

In December the most popular German Christmas carol will be learned:

"Stille Nacht, Heilige Nacht!"

Stille Nacht, heilige Nacht!
Alles ſchläft, einſam wacht
Nur das traute, hochheilige Paar,
Das im Stalle zu Bethlehem war
Bei dem himmliſchen Kind. (Kehrreim)

Variation:

Holder Knabe im lockigen Haar,
Schlaf in himmliſcher Ruh! (Kehrreim)

Stille Nacht, heilige Nacht!
Hirten erſt kund gemacht.
Durch der Engel hallelujah
Tönt es laut von fern und nah:
Chriſt der Retter iſt da! (Kehrreim)

Stille Nacht, heilige Nacht!
Gottes Sohn, o wie lacht
Lieb' aus deinem göttlichen Mund,
Da uns ſchlägt die rettende Stund
Chriſt in deiner Geburt! (Kehrreim)

FOURTH YEAR. (For the pupils of the third year there is at present no need for German.) Careful attention is paid to literature in this class. The study from October until New Year is Schiller in his life and work, his educational thoughts, and his relations to contemporaneous and subsequent English literature. The memory work has been selected as follows from his poems: for October and November, *Das Mädchen aus der Fremde, Die Worte des Glaubens;* for December, *Der Handschuh*, and a few extracts from his epigrams. Suitable dictations and translations have been and will continue to be prominent means for certain parts in grammar and orthography in which the pupils show themselves deficient. The basis for orthography is *Regel-und Wörterverzeichnis für die preussischen Schulen*, Berlin, 1900.

December will be particularly devoted to the improvement in letter-writing. For extended reading exercises Schiller's *Der Neffe als Onkel* will be used. Although this play is only a translation from the French *Médiocre et Rampant*, by Louis B. Picard, the masterful style of Schiller rendered it capable of treatment as a genuine German composition. The amusing comedy abounds in the best every-day phrases and idioms, combined with a bright dialogue, sparkling wit, and charming, practical morality. An elaborate description of Lincoln Park has served to improve the style, and furnish correlation with other branches of study. The work for December will be based upon a description of the Rhine.

To what degree composition, first fruit of instruction, must be given attention, the following specimen may illustrate:

Geſang der Geiſter über den Waſſern.

Des Menſchen Seele
Gleicht dem Waſſer:
Vom Himmel kommt es,
Zum Himmel ſteigt es,
Und wieder nieder
Zur Erde muß es,
Ewig wechſelnd.

Strömt von der hohen,
Steilen Felswand
Der reine Strahl,
Dann ſtäubt er lieblich
In Wolkenwellen

Zum glatten Fels,
Und leicht empfangen,
Wallt er verſchleiernd,
Leis rauſchend
Zur Tiefe nieder.

Ragen Klippen
Dem Sturz entgegen,
Schäumt er unmutig
Stufenweiſe
Zum Abgrund.

Im flachen Bette
Schleicht er das Wieſenthal hin,
Und in dem glatten See
Weiden ihr Antlitz
Alle Geſtirne.

Wind iſt der Welle
Lieblicher Buhler;
Wind miſcht vom Grund aus
Schäumende Wogen.

Seele des Menſchen,
Wie gleichſt du dem Waſſer!
Schickſal des Menſchen,
Wie gleichſt du dem Wind!

Wolfgang Göthe.

Spirit Song Over the Waters.

The soul of man
Resembles water;
From heaven it cometh,
To heaven it soareth
And then again,
To earth descendeth,
Changing forever.

Down from the lofty
Rocky wall
Streams the bright flood,
Then spreadeth gently
In clouded billows

O'er the smooth rock,
And welcomed kindly,
Veiling, on roams it,
Soft-murmuring,
Toward the abyss.

Cliffs projecting
Oppose its progress,—
Angrily foams it
Down to the bottom
Step by step.

Now, in flat channel,
Through the meadowland steals it.
And in the polish'd lake
Each constellation
Joyously peepeth.

Wind is a loving
Woer of water;
Wind blends together
Billows all foaming.

Spirit of man,
Thou art like unto water!
Fortune of man,
Thou art like unto wind!

—*Edgar Bowring.*

Das Waſſer ein Bild der Seele

nach Göthe's Gedicht: Geſang der Geiſter über den Waſſern. Das Waſſer überhaupt als Element in ſeinen verſchiedenen Daſeinsformen und Phänomenen, nicht etwa ein Bach in verſchiedenen Stadien ſeines Laufes dient als Gleichnis. Dem auf die Stimmen der Waſſer lauſchenden Dichter erzählen die Geiſter derſelben die geheimnisvolle Geſchichte der menſchlichen Seele.

I. Das Waſſer in der Atmoſphäre.

1. Naturbild. Einſt ſchwebte alles Waſſer in Dampfform über der glühenden Erdkugel; als deren Rinde ſich im Luftraum verkühlte, ſtrömte das Waſſer herab und füllte die Meeresbecken und Stromrinnen aus. — Das Waſſer verwandelt ſich bei höherer Temperatur wieder in Dampf, erhebt ſich in die Lüfte und wird als Wolke vom Wind auf ſeine Flügel genommen, um über kurz oder lang als Regen oder Tau, Hagel- oder Schneeſchauer ſich abermals niederzuſchlagen. Das Waſſer iſt alſo in ewigem Kreislauf unterwegs zwiſchen Himmel und Erde.

2. Anwendung. So iſt auch die Menſchenſeele ſchwebend zwiſchen Himmel und Erde, wechſelsweiſe von dem Himmel und von der Erde angezogen. Der ideale Zug, das überſinnliche Weſen der Seele deutet auf eine höhere, über dieſe Erde hinausliegende Heimat (die religiöſen Ahnungen ſind das erſte, womit die Völker ihr geſchichtliches Leben beginnen); und doch ſieht ſich die Seele in ihrem Leben und Wirken auf dieſen irdiſchen Schauplatz angewieſen und durch ihren Körper, ſeine Bedürfniſſe und Triebe gleich dem Tiere an die Erdſcholle gebunden. Stets ſtrebt ſie in höhere Regionen empor, ohne doch in denſelben dauernd verweilen zu können: ſie muß über kurz oder lang immer wieder auf die Erde und in die Materie zurückfallen. Daher der Menſch nach Herder das verbindende Mittelglied zweier Welten.

II. Das Waſſer auf der Erdoberfläche, in ſeiner Wirkungsweiſe und Erſcheinung durch Bodenverhältniſſe bedingt.

1. Das Waſſer im Sturz zur Tiefe.

a. Staubbach. Naturvorbild im Lauterbrunnenthal. Ein anſehnlicher Bach ſtürzt von einer 264 Meter hohen ſenkrechten Felswand in das Thal, ohne auf ſeinem Wege durch die freie Luft auf ein Hindernis zu ſtoßen: eines der graziöſeſten Naturſchauſpiele. Der anfangs geſchloſſen im Bogen ſich über die Felswand hervorſtürzende Strahl löſt ſich in der Luft auf, um unten als rieſelnder Staubregen anzukommen, und gewährt von unten angeſehen das Bild eines luftigen Schleiers, der von den Winden, die ihn ergreifen, bald dahin bald dorthin geweht, immer wieder in andere Falten fällt.

Anwendung. Bild einer ſchönen, harmoniſch angelegten Seele, welche in ihrer Entwickelung ohne Hindernis, Bruch oder Anſtoß fortſchreitet, ſtetig nur den eigenen Impulſen gehorchend. Solche Naturen zeigen ein geringeres Maß von Kraft; aber ſie entzücken uns durch eine gewiſſe ſpielende Leichtigkeit des Daſeins, durch welche Anmut und Schönheit der Empfindung, welche auch allem eigen ſein wird, was von ihnen kommt. Dieſer Art iſt die weibliche Seele bei den am feinſten organiſierten Individuen: Homer, Sophokles, Buddha, Rafael, Mozart, Göthe, Emerſon.

b. Kaskade, deren Waſſermaſſe im Sturz an entgegenſtehenden Klippen aufprallt, und nun über dieſelben hinweg mit ſchäumendem Giſcht und wildem Rauſchen in mächtigen Abſätzen den Weg in die Tiefe ſucht: das impoſante Bild großartiger Kraftentwickelung, die eben in der Ueberwindung großer Schwierigkeiten zur Erſcheinung kommt.

Anwendung. Bild einer ſtarken, ſchroffe Gegenſätze in ſich verarbeitenden, in ihrer Entwickelung durch gewaltſame Kriſen und heftige Gemütskämpfe hindurchgehenden Seele, die eben darum eine gewiſſe Schroffheit und Härte an ſich hat, ſtoßweiſe mit leidenſchaftlicher Heftigkeit und Gewaltſamkeit wirkt und mit niederwerfender Thatkraft durch Feinde und Hinderniſſe aller Art ſich durchſchlägt, ohne jedoch zu der innern Harmonie jener ſchönen Naturen gelangen zu können. Hieher gehören die zu ſchroffem Wirken nach außen geſchaffenen männlichen Naturen wie Bismarck, Künſtler wie Dante, Michel Angelo, Schiller, Beethoven, Richard Wagner; unter den Helden der Religion Paulus, Luther.

2. Das Waſſer in horizontaler Lage, fließend und ſtehend.

a. Der Fluß im Thal. Das Waſſer in einem geregelten Bett und in beſchränkter und ruhiger Natur (Wieſenthal) fließt dahin mit ſtetiger, aber bei dem geringen Gefälle träger und gleichförmiger Bewegung ſeiner Wellen, ohne irgendwo eine größere Tiefe zu erreichen.

Anwendung. Bild einer in enggebundene Berufsverhältniſſe hineingeſtellten Seele; ihr Leben iſt ausgefüllt durch eine gewiſſe regelmäßige und gleichförmige Thätigkeit („Wie ihr Tagewerk gleich windet ihr Leben ſich ab"), die gerade ausreicht, ſie in einer gewiſſen Unruhe zu erhalten, aber nicht Raum giebt für eine geiſtige Vertiefung.

b. Der See. Alle Bewegung des Waſſers hat aufgehört; das Waſſer ſteht ſtille und bildet nun einen glatten Spiegel, in welchem die Sterne des Himmels ſich beſchauen.

Anwendung. Bild einer Seele, die ſich in ſinnige Betrachtung verſenkt. Befreit von jener zerſtreuenden Thätigkeit nach außen finden ſolche Naturen jene beſchauliche Stille und Sinnigkeit, welche unentbehrlich iſt, um das Weltbild reich und tief in ſich aufzunehmen und mit voller Klarheit die Ideale der Menſchenbruſt wiederzuſpiegeln.

3. Die Waſſerfläche unter dem Einfluß des Windes.

(Wir haben an eine ausgedehntere Fläche, etwa einen See zu denken).

Doppelte Wirkungsweiſe des Windes:

a. Der Wind weht über den See als ein fächelnder Hauch, der nur deſſen Oberfläche rührt und den Waſſerſpiegel kräuſelt.

Anwendung. Die Seele lernt das Schickſal

nur kennen von deſſen freundlicher Seite. Es verfährt mit ihr gelind; koſend und ſchmeichelnd, höchſtens einmal neckend führt es ſie durchs Leben. Die Seele entnimmt dann dem Leben nur leichte Reize und Eindrücke, die nicht beſonders tief gehen und an der Oberfläche haften.

b. Der Wind weht über den See als ein brauſender Orkan, der ihn in ſeinen Tiefen aufwühlt, daß mächtige Wogen brandend aneinanderſchlagen und das Unterſte ſich zu oberſt kehrt.

Anwendung. Aber das Schickſal zeigt ſich der Seele oft auch von ſeiner furchtbaren, erſchütternden Seite. Gewaltige Schickſalsſchläge ſtürmen wild auf die Seele ein, ſchneiden tief in ihr Innerſtes ein, werfen ſie in den Extremen der Empfindung herum und wühlen alles auf, Gutes und Schlimmes, was von erhabener Kraft und von dämoniſcher Leidenſchaft auf dem verborgenen Grunde des Herzens ſchlummert.

Die Seele ſteht in ihrer ganzen Stimmung und Färbung unter dem Einfluß des Schickſals wie der Waſſerſpiegel unter dem Einfluß des Windes. Wie die vom Sturm erregte See eine ganz andere Phyſiognomie zeigt als der Waſſerſpiegel, mit dem der Zephyr ſpielt, ſo gleicht die Seele, deren Leben ein ſonniger Maitag iſt, der andern nicht, welche durch ſchwere Schickſalsſtürme in die Tiefen des Leidens eingetaucht worden iſt.

On account of the importance of the subject, the English translation is given.

WATER AN IMAGE OF THE SOUL, according to Göthe's poem: *Spirit Song Over the Waters.*

In its various forms and manifestations, water generally as an element and not perhaps in the various stages of its course in a brook serves as a simile. The spirits of the water whisper to the poet the mystic story of the human soul.

I. Water in the atmosphere. Nature-picture. At a time in the indefinite past, all water floated in the form of vapor over the glowing terrestrial globe; when the earth's crust cooled in the aërial sea, the water poured down filling the ocean basins and the river channels. Under the influence of a higher temperature, water re-vaporizes, rises in the air, and is carried as clouds on the wings of the wind, sooner or later to fall down again upon the earth as rain, dew, hail, or snow. Water, therefore, is in perpetual circulation between sky and earth.

Application. So too does the human soul hang soaring between heaven and earth, drawn alternately toward the one and the other. The idealistic tendency, the supernatural essence of the soul points to a higher home beyond the earth (the religious premonitions are the first indications that a nation has begun its historical life); and yet the soul finds itself confined to a terrestrial sphere of action, and through its body, needs, and instincts, bound to the earth as irretrievably as is the animal. It is continuously struggling toward higher realms, but without the ability to establish permanent habitation in them: sooner or later, it must fall back again upon the earth and matter. Man, therefore, according to Herder, is the connecting link between two worlds.

II. Water on the surface of the earth. In its effects and phenomena, conditioned by the nature of the soil.

1. Water in its downward rush. (a) Staubbach (spraying waterfall). Prototype in nature in the valley of Lauterbrunnen (the view of the waterfall at the foot of the Jungfrau in the canton of Bern on Göthe's second voyage to Switzerland, September, 1779, to January, 1780, gave birth to the poem). A brook of considerable size plunges from a vertical wall of rock 264 meters high, into the valley, without meeting with any obstacle in its downward flight through the air, one of the most graceful of natural spectacles. The arrowlike ray, at first resembling a bow dashing far over the cliffs, dissolves in the air to fall as a drizzling rain. Seen from below, it presents a picture of an airy veil, which, carried on the wings of the wind, is blown hither and thither, to fall in an ever-changing, never-ending series of gauze-like undulations.

Application: Image of a beautifully harmonious disposition of the soul, which in its development, without let, hindrance, or setback, moves continuously forward, obedient to nothing save its own innate impulse. Such natures manifest a small measure of strength, but they charm us with a certain buoyancy of spirit, through a sweetness and beauty of feeling, which characterizes everything they produce. Of such sort is the feminine spirit with the most delicately organized individuals, for instance, Homer, Sophocles, Buddha, Rafaël, Mozart, Göthe, Emerson.

b. Cascade. The waters of which dashing down, bound from the cliff and far beyond with foaming crest and roaring sound, and in mighty leaps fight their way downward: the imposing image of a grand development of strength, the very existence of which was conditioned by the overcoming of tremendous difficulties.

Application: Image of a powerful soul assimilating vigorous contrarieties of thought, which in its development struggles through difficult crises, and vehement internal conflicts. For this very reason, it has assumed a certain harshness and sternness, acts by impulse with passionate vigor and vehemency, and forces its way through foes and barriers of all sorts with victorious onslaught, but ever falling short of the deeply yearned-for harmony of nobler minds. To this class belong the rougher masculine natures destined for the sterner realities of active life, as Bismarck, or as the artists Dante, Michael Angelo, Schiller, Beethoven, Richard Wagner; as heroes of religion, Paul, Luther.

2. Water in a horizontal position, flowing or standing.

a. The river in the valley. The water flows on in its smoothly-ordered bed, and through a monotonously peaceful landscape (meadowland) with steady, and from the slight fall, with even and uninterrupted motion, nowhere attaining any considerable depth.

Application: Image of a soul constrained to act in narrow professional vocations; its life is filled with a certain mechanical round of duties ("Its life unfolds through its daily work") which just suffices to keep it perpetually disturbed, but does not furnish opportunity for deepening the mental life.

b. The lake. All movement of the water has ceased. The water now stands still, forming a smooth surface, in which the stars of heaven mirror themselves.

Application: Image of a soul absorbed in profound contemplation. Freed from the distracting influence of the external things, such natures find that quiet contemplativeness and sensitiveness which are indispensable to the deep and rich absorption of the world-panorama, and to the reflection with perfect sharpness of all the ideals of the human heart.

c. A sheet of water under the influence of the wind. We must have in mind an extended surface of water, such as a lake.

Twofold effect of the wind:

1. The wind fans the surface of the water like a gentle zephyr, barely moving it into graceful ripples.

Application: The soul of man learns its destiny only through acts of kindness. Leniently does destiny deal with it; with caress, and flattery, yea, even with mild irony does it lead the soul through life. The human spirit takes then from life only the slightest and most superficial impressions and stimuli.

2. The wind blows over the lake in a roaring hurricane, stirring it to its profoundest depths; huge breakers lashing each other and crushing with fiendish glee all within reach.

Application: But destiny often reveals itself through its manifestations of awe-inspiring terror. The gigantic strokes of destiny beat wildly upon the soul, gashing it to its very core, hurling it back and forth between the most antagonistic dispositions, dragging to the surface everything, good and bad, that lies buried in the depths of the human heart, from sublimest strength to most demonlike passion.

Every mood and temper of the soul is as fully subject to the influence of destiny as is the surface of the water to that of the wind. As the features of the storm-tossed sea differ from those of the placid surface of the water over which the zephyr plays, so does the soul whose life is perpetual May-day differ from the one which has been plunged into the yawning abyss of deep affliction by the simooms of fate.

Greek and Latin

Allen W. Gould

The pupils who are beginning Greek, as well as those beginning Latin, will continue their study of the life of the Greeks and Romans through the language in which that life expressed itself. By December it is expected that the Greek pupils will be able to enter more fully into the inner life of the Greeks, since the easier words and phrases have already become familiar to them. Consequently the ethical and intellectual life of the Greeks, which was touched upon in the last lesson of October, by reading in a simplified form Socrates' talk with his son about duty to mothers, is brought still nearer to the student by giving in Lesson XI an adaptation of Alcibiades' talk with Pericles about the nature of human law, and in Lesson XII an extract from Socrates' talk with Aristippus about the education they ought to give a youth who wishes to be of use to his native country. This is followed in Lesson XIII and XIV by a somewhat less simplified reproduction of Socrates' talk with a brother who cannot agree with his brother, and a friend who cannot support the poor relations thrust upon him by the chance of civil war in Attica. These discussions will help the pupils to get the spirit of the best Greek thought while they are learning the forms of that thought as given by Xenophon. Some of these lessons have been illustrated by statues or pictures drawn from vases, in order to make the ideas clearer and more concrete.

The successive lessons have been so planned as to give the student the easier and more concrete words and phrases and the more tangible aspects of Greek life first, and to present with each advance only a moderate number of new words and constructions; and it is intended to give sufficient practice, both written and oral, to make the new forms and ideas familiar to the pupil.

A similar series of studies of Roman life and thought was planned for the class beginning Latin in the Sixth Grade, though the steps of advance could not be so rapid, because the students are younger and the language more difficult. But owing to the fact that a large number of pupils in the Ninth Grade — the first year of the High School — wished to begin Latin, a series of lessons had to be arranged which should be fitted to more mature minds than are common in the Sixth Grade, and which should advance more rapidly than we had planned to do with that grade. Some of the material which was used with the advanced class in October is printed in this issue of the COURSE OF STUDY. These lessons are also illustrated by two scenes of school life, one drawn from a Greek vase of Socrates' day, and the other from a wall-painting in Herculaneum. They will be found on pages 323 and 325.

Greek

FIRST YEAR, EIGHTH GRADE. The Reading Lessons for December will be found on page —.

SECOND YEAR, NINTH GRADE. In December the pupils will read the fifth and sixth chapters of the first book of Xenophon's *Anabasis*, giving especial attention to the typical Persian trial and comparing it with the trial of an Athenian citizen at Athens. They will look up *Dicastes* and *Dike* in Harper's *Dictionary of Classical Literature and Antiquities*, and in Smith's *Dictionary of Greek and Roman Antiquities*. They will also read the account of the Athenian courts in Grote's *Greece*, chapters 46 and 70, and in Curtius' *Greece*, Book III, chapter 3. They will also note the difference between Greek and Persian arms and armies.

THIRD YEAR, TENTH GRADE. The class will begin the study of Plato's Apology, reading the first six chapters. They will make themselves acquainted with Plato's life as found in Harper's *Classical Dictionary* and Smith's *Dictionary of Greek and Roman Biography*, as well as in the encyclopedias. They will also make a fuller study of Greek courts by reading chapter 46 of Grote's *Greece*. They will learn the popular prejudice against Socrates by reading parts of Aristophanes' *Clouds*, and the religious feeling by reading Campbell's *Religion in Greek Literature*, chapter 14.

FOURTH YEAR, ELEVENTH GRADE. Students will continue their investigation into the religion of the Greeks by reading the third book of the Odyssey. They will also look up and report to the class *Agamemnon* and *Menelaus* in Smith's *Dictionary of Greek and Roman Biography and Mythology; Argos* and *Mycene* in Smith's *Dictionary of Greek and Roman Geography; Sac-*

rificium in Smith's *Dictionary of Greek and Roman Antiquities*, and all of these subjects in Harper's *Classical Dictionary* and the encyclopedias. They will also read and report Campbell's *Religion in Greek Literature*, chapter 3.

FIFTH YEAR, TWELFTH GRADE. The class will review the first 700 lines of Sophocles' *Antigone*, devoting special attention to the dramatic rendering of the Greek dialogue. It is expected that we shall read in advance to line 883, making a careful study of the choral passages. Besides consulting the works already referred to, the students will read Haigh's *Attic Theatre*, chapters 1, 2 and 6.

Latin

FIRST YEAR, SIXTH GRADE. Two sets of lessons for the first year of Latin are found in this number, one on page 325 and the other on page 328.

SECOND YEAR, SEVENTH GRADE. The study of the life of the Romans, as revealed in their history, will be continued by reading Nepos's *Hannibal*, chapters 4-9. A fuller knowledge of the battles of the *Trebia*, *Trasimene*, *Cannæ*, and *Zama* will be secured from Smith's *Dictionary of Geography* and Harper's *Classical Dictionary*, as well as from the encyclopedias. The students will also consult Smith's *Dictionary of Biography*, and Harper's *Classical Dictionary*, and the encyclopedias under *Scipio Africanus the Younger*. Mommsen's *Rome*, Bk. III, chapters 4-6, and Morris' *Hannibal*, chapters 4-8, will give a more connected outline.

THIRD YEAR, EIGHTH GRADE. The class will continue their study of the beginnings of European civilization by reading Cæsar's *Gallic War*, II, 20-35, and by consulting Smith's *Dictionary of Antiquities* and Harper's *Classical Dictionary* on *cornu*, *lituus*, *scutum*, *vinea*, *agger*, and *turris*. More details and different points of view will be found in Fowler's *Cæsar*, chapter 10, Mommsen's *Rome*, Bk. V, chapter 7, and Merivale's *Romans*, chapters 5-8.

FOURTH YEAR, NINTH GRADE. The class will continue its study of the crisis in the Roman government by reading Cicero's First Oration against Catiline, for which their acquaintance with Sallust's *Conspiracy of Catiline* has prepared them. They will consult Harper's *Classical Dictionary* and Smith's *Dictionary of Antiquities* under *Consul* and *Senatus*, to find the powers of these two authorities. They will also report what they find in Forsyth's *Cicero*, chapters 7, 8; Davidson's *Cicero*, chapter 5; Fowler's *Cæsar*, chapter 5; Merivale's *Romans*, chapter 3; Mommsen's *Rome*, Book V, chapter 5; and Plutarch's *Life of Cicero*.

FIFTH YEAR, TENTH GRADE. The study of Roman life as revealed in the poetry will be continued by reading Lucretius III, 1-30, 830-864, 894-1094; V, 1-96, 146-169. Different estimates of this great poet will be found in Sellar's *Roman Poets of the Republic*, chapters 10-14; Mallock's *Lucretius*, chapters 3-6; Cruttwell's *History of Roman Literature*, Part I, chapter 4.

SIXTH YEAR, ELEVENTH GRADE. The class will continue their study of the Roman religion by reading Virgil's *Æneid*, I, 657–II, 335. They will consult Smith's *Dictionary of Biography and Mythology* on *Hector*, *Laocoön*, *Dido*, and *Cupid;* Smith's *Dictionary of Antiquities* on *Palladium*, and Harper's *Classical Dictionary* and the encyclopedias on all of these subjects.

SEVENTH YEAR, TWELFTH GRADE. The pupils will continue their study of what was best under the Roman Empire by taking up Tacitus' *Life of Agricola*. They will consult Smith's *Dictionary of Biography* under *Tacitus*, *Agricola*, *Nerva*, *Trojan*, and *Boadicea*, and Harper's *Classical Dictionary* and the encyclopedias for the same subjects. Merivale's *History of* *the Romans*, chapter 61, will give a more general view of the times; while Tennyson's *Boadicea* will show how the poet looks at these characters.

Greek Lessons

XI.

Ὀλίγων οἱ αγαθοὶ νόμων δέονται· οὐ γὰρ τὰ πράγματα πρὸς νόμους, ἀλλὰ οἱ νόμοι πρὸς τὰ πράγματα τίθενται.

Θεόφραστος.

Alcibiades Tests Pericles' Definition of Law

1. What is Law?

Λέγεται Ἀλκιβιάδην, πρὶν εἰκοσιν ἐτῶν εἶναι, Περικλεῖ τοιάδε διαλεχθῆναι περὶ νόμων·

Εἰπέ μοι, ἔφη, ὦ Περίκλεις, ἔχοις ἄν με διδάξαι, τί ἐστι νόμος;

Πάντως δήμου, ἔφη ὁ Περικλῆς.

Δίδαξον δὴ πρὸς τῶν θεῶν, ἔφη ὁ Ἀλκιβιάδης.

Ἀλλ' οὐδέν τι χαλεποῦ πράγματος ἐπιθυμεῖς, ὦ Ἀλκιβιάδη, ἔφη ὁ Περικλῆς, βουλόμενος γνῶναι, τί ἐστι νόμος· πάντες γὰρ οὗτοι νόμοι εἰσίν, οὓς τὸ πλῆθος συνελθὸν ἔγραψεν ἅ τε δεῖ ποιεῖν καὶ ἃ μή.

Ἐὰν δὲ μὴ τὸ πλῆθος, ἀλλ', ὥςπερ ὅπου ὀλιγαρχία ἐστίν, ὀλίγοι συνελθόντες γράψωσιν, ὅ τι χρὴ ποιεῖν, ταῦτα τί ἐστι;

Πάντα, ἔφη, ὅσα ἂν τὸ κρατοῦν τῆς πόλεως βουλευσάμενον, ἃ χρὴ ποιεῖν, γράψῃ, νόμος καλεῖται.

Καὶ ἂν τύραννος οὖν κρατῶν τῆς πόλεως γράψῃ τοῖς πολίταις, ἃ χρὴ ποιεῖν, καὶ ταῦτα νόμος ἐστί;

Καὶ ὅσα τύραννος ἄρχων, ἔφη, γράφει, καὶ ταῦτα νόμος καλεῖται.

2. But what, then, is Lawlessness?

Βία δέ, ἔφη ὁ Ἀλκιβιάδης, καὶ ἀνομία τί ἐστιν, ὦ Περίκλεις; Ἆρ' οὐχ ὅταν ὁ κρείττων τὸν ἥττω μὴ πείσας, ἀλλὰ βιασάμενος ἀναγκάσῃ ποιεῖν, ὅ τι ἂν αὐτῷ δοκῇ;

Ἔμοιγε δοκεῖ, ἔφη ὁ Περικλῆς.

Καὶ ὅσα ἄρα τύραννος μὴ πείσας τοὺς πολίτας ἀναγκάζει ποιεῖν γράφων, ἀνομία ἐστί;

Δοκεῖ μοι, ἔφη ὁ Περικλῆς· ἀνατίθεμαι γὰρ τὸ ὅσα τύραννος μὴ πείσας γράφει νόμον εἶναι.

Ὅσα δὲ οἱ ὀλίγοι τοὺς πολλοὺς μὴ πείσαντες, ἀλλὰ κρατοῦντες γράφουσι, πότερον βίαν φῶμεν, ἢ μὴ φῶμεν εἶναι;

Πάντα μοι δοκεῖ, ἔφη ὁ Περικλῆς, ὅσα τις μὴ πείσας ἀναγκάζει τινὰ ποιεῖν, εἴτε γράφων εἴτε μή, βία μᾶλλον ἢ νόμος εἶναι.

Καὶ ὅσα ἄρα τὸ πᾶν πλῆθος κρατοῦν τῶν τὰ χρήματα ἐχόντων γράφει μὴ πεῖσαν, βία μᾶλλον ἢ νόμος ἂν εἴη;

Μάλα τοι, ἔφη ὁ Περικλῆς.

Consult Smith's *Dictionary of Biography* and Harper's *Classical Dictionary*, and the Encyclopedias on *Alcibiades*, and Harper's *Dictionary* on *Oligarchia*, *Democratia* and *Tyrannos*.

Questions to be Answered in Greek

1. How old was Alcibiades when he conversed with Pericles about law?
2. What was Pericles' first definition of law?
3. What was his definition when not a democracy but an oligarchy was the ruling authority?
4. What was a democracy?
5. What was an oligarchy?
6. What was his definition of law when a tyrant was the ruler?
7. What was his definition of violence?
8. Could we have law without violence, unless all people obeyed the law?
9. Who wrote this conversation of Pericles and Alcibiades?

Vocabulary of New Words

πρίν, *before*.
εἴκοσι, *twenty*.
ἔτος, ους, τό, *year*.
τοιόσ-δε, τοιά-δε, τοιόν-δε, *such*.
διαλεχθῆναι, from διαλέγομαι, *converse*.
εἶπον, *said*.

δή-που, *of course.*

πρâγμα, ατος, τὸ, *act*, *thing*, *affair.*

ἐπι-θυμέω, *desire.*

γνῶναι, from γιγνώσκω, *know.*

πλῆθος, ους, τὸ, *multitude.*

συν-ελθόν, from συνέρχομαι, *come together*

δεῖ, from δέω, *want*, *need.*

ὅπου, *where.*

ὀλίγος, η, ον, *little;* pl. *few.*

ὀλιγαρχία, ας, ἡ, *oligarchy.*

χρή, *it is necessary.*

κρατέω, *be powerful*, *master.*

ὅσος, η, ον, *as many as.*

βουλεύω, *counsel*, *plan.*

τύραννος, ου, ὁ, *absolute ruler.*

πόλις, εως, ἡ, *city.*

πολίτης, ου, *citizen.*

ἄρχω, *rule*, *be first*, *begin.*

βία, ας, ἡ, *force.*

βιάζομαι, *force*, *constrain.*

ἀνομία, ας, ἡ, *lawlessness.*

κρείττων, ον, *stronger.*

ἥττων, ον, *weaker.*

ἀναγκάζω, *compel.*

πείθω, *persuade.*

ἀνατίθεμαι, *put up*, *retract.*

χρήματα, τα, *possessions;* from χρῆμα, ατος, τό, *thing used.*

XII.

Θεὸς συνεργὸς πάντα ποιεῖ δᾳδίως.

Μένανδρος.

What training does a youth need who would be a help to his native land?

Εἰπέ μοι, ἔφη ὁ Σωκράτης, ὦ Ἀρίστιππε, εἰ δέοι σε παιδεύειν δύο τῶν νέων, τὸν μὲν, ὅπως ἱκανὸς ἔσται ἄρχειν, τὸν δὲ, ὅπως μηδ' ἀντιποιήσεται ἀρχῆς, πῶς ἂν ἑκάτερον παιδεύοις; Βούλει σκοπῶμεν, ἀρξάμενοι ἀπὸ τῆς τροφῆς; Οὐκοῦν τὸ μὲν βούλεσθαι σίτου ἅπτεσθαι, ὅταν ὥρα ἥκῃ, ἀμφοτέροις εἰκὸς παραγίγνεσθαι;

Εἰκὸς γάρ, ἔφη ὁ Ἀρίστιππος.

Τὸ οὖν προαιρεῖσθαι τὸ κατεπεῖγον μᾶλλον πράττειν ἢ τῇ γαστρὶ χαρίζεσθαι πότερον ἂν αὐτῶν παιδεύοιμεν;

Τὸν εἰς τὸ ἄρχειν, ἔφη, νὴ Δια, παιδευόμενον, ὅπως μὴ τὰ τῆς πόλεως ἄπρακτα γίγνηται παρὰ τὴν ἐκείνου ἀρχήν.

Οὐκοῦν, ἔφη, καὶ ὅταν πιεῖν βούλωνται, τὸ δύνασθαι διψῶντα ἀνέχεσθαι τῷ αὐτῷ προςθετέον;

Πάνυ μὲν οὖν, ἔφη.

Τὸ δὲ ὕπνου ἐγκρατῆ εἶναι, ὥςτε δύνασθαι καὶ ὀψὲ κοιμηθῆναι καὶ πρωῒ ἀναστῆναι καὶ ἀγρυπνῆσαι, εἴ τι δέοι, ποτέρῳ ἂν προςθείημεν;

Καὶ τοῦτο, ἔφη, τῷ αὐτῷ.

Τί δέ; ἔφη, τὸ μὴ φεύγειν τοὺς πόνους, ἀλλὰ ἐθελοντὴν ὑπομένειν, ποτέρῳ ἂν προςθείημεν;

Καὶ τοῦτο, ἔφη, τῷ ἄρχειν παιδευομένῳ.

Τί δέ; τὸ μαθεῖν, εἴ τι ἐπιτήδειόν ἐστι μάθημα πρὸς τὸ κρατεῖν τῶν ἀντιπάλων, ποτέρῳ ἂν μᾶλλον προσθείημεν;

Πολὺ, νὴ Δί', ἔφη, τῷ ἄρχειν παιδευομένῳ· καὶ γὰρ τῶν ἄλλων οὐδὲν ὄφελος ἄνευ τῶν τοιούτων μαθημάτων.

Consult Smith's *Dictionary of Biography* and Harper's *Classical Dictionary* on *Aristippus*, and look up Spartan education under *Ludus* in Smith's *Dictionary of Antiquities*, and under *Education* in Harper's.

Questions to be Answered in Greek

1. Who was Aristippus?
2. How did Socrates think a youth, who was to take part in the government of his country, ought to be trained in regard to eating?
3. How, in regard to drinking?
4. How, in regard to sleeping?
5. How, in regard to labors?
6. How, in regard to studies?
7. Did the Athenians try to train their youth in this way?

Vocabulary of New Words

ἀγρυπνέω, *be wakeful.*
ἀμφότερος, α, ον, *both of two.*
ἀνέχομαι, *endure;* from ἀνέχω.
ἀναστῆναι, *arise;* from ἀνίστημι.
ἀντίπαλος, ου, *rival.*
ἀντιποιέομαι, *claim, aspire to.*
ἅπτομαι, *seize;* from ἅπτω, *fasten.*
γαστήρ, έρος, ἡ, *belly, stomach.*
διψάω, *thirst.*
ἐγκρατής, ες, *master of.*
εἰκός, ότος, τό, *likely.*
ἑκάτερος, α, ον, *each of two.*
ἐπιτήδειος, α, ον, *suitable.*
ἱκανός, ή, όν, *competent, able.*
κατεπείγω, *press, be urgent.*
κοιμηθῆναι, *fall asleep;* from κοιμάω.
μάθημα, ατος, τό, *learning.*
ὄφελος, τό, *advantage.*
παιδεύω, *train, educate.*
πιεῖν, *drink;* from πίνω.
πόνος, ου, *labor.*
πότερος, α, ον, *which of two?*
πράττω, *do, perform.*
προαιρέομαι, *prefer;* from προαιρέω.
προσθετέον, προσθείημεν, from προςτίθημι, *impose upon.*
σῖτος, ου, *grain, food.*
σκοπέω, *consider, examine.*
τροφή, ῆς, *nourishment.*
φεύγω, *flee.*
χαρίζομαι, *gratify.*
ὥρα, ας, *time, season.*

XIII.

Ἀδελφὸς ἀνδρὶ παρείη. Πλάτων.

Brothers Should Dwell Together in Unity

1. The Value of a Brother.

Ὁ δὲ Σωκράτης ποτὲ Χαιρεφῶντα καὶ Χαιρεκράτην, ἀδελφὼ ὄντε ἀλλήλοιν, αἰσθόμενος διαφερομένω, ἰδὼν τὸν Χαιρεκράτην, Εἰπέ μοι, ἔφη, ὦ Χαιρέκρατες, οὐ δήπου καὶ σὺ εἶ τῶν τοιούτων ἀνθρώπων, οἳ χρησιμώτερον νομίζουσι χρήματα ἢ ἀδελφούς; Θαυμαστὸν γάρ εστιν, εἴ τις τοὺς μὲν ἀδελφοὺς ζημίαν ἡγεῖται, ὅτι οὐ καὶ τὰ τῶν ἀδελφῶν κέκτηται, τοὺς δὲ πολίτας οὐχ ἡγεῖται ζημίαν, ὅτι οὐ καὶ τὰ τῶν πολιτῶν ἔχει, ἀλλ' ἐνταῦθα μὲν δύναται λογίζεσθαι, ὅτι κρεῖττον σὺν πολλοῖς οἰκοῦντα ἀσφαλῶς ἀρκοῦντα ἔχειν, ἢ μόνον οἰκοῦντα τὰ τῶν πολιτῶν ἐπικινδύνως πάντα κεκτῆσθαι, ἐπὶ δὲ τῶν ἀδελφῶν τὸ αὐτὸ τοῦτο ἀγνοοῦσι. Καὶ οἰκέτας μὲν οἱ δυνάμενοι ὠνοῦνται, ἵνα συνεργοὺς ἔχωσι, καὶ φίλους κτῶνται, ὡς βοηθῶν δεόμενοι, τῶν δ' ἀδελφῶν ἀμελοῦσιν ὥςπερ ἐκ πολιτῶν μὲν γιγνομένους φίλους, ἐξ ἀδελφῶν δὲ οὐ γιγνομένους.

2. A Useless Brother.

Καὶ ὁ Χαιρεκράτης εἶπεν· Ἀλλ' εἰ μέν, ὦ Σώκρατες, μὴ μέγα εἴη τὸ διάφορον, ἴσως ἂν δέοι φέρειν τὸν ἀδελφὸν καὶ μὴ μικρῶν ἕνεκα φεύγειν· ἀγαθὸν γάρ, ὥςπερ καὶ σὺ λέγεις, ἀδελφός, ὢν οἷον δεῖ.

Καὶ ὁ Σωκράτης ἔφη· Πότερα δέ, ὦ Χαιρέκρατες, οὐδενὶ ἀρέσαι δύναται Χαιρεφῶν, ὥςπερ οὐδὲ σοί, ἢ ἔστιν οἷς καὶ πάνυ ἀρέσκει;

Διὰ τοῦτο γάρ τοι, ἔφη, ὦ Σώκρατες, ἄξιόν ἐστιν ἐμοὶ μισεῖν αὐτόν, ὅτι ἄλλοις μὲν ἀρέσκειν δύναται, ἐμοὶ δέ, ὅπου ἂν παρῇ, πανταχοῦ καὶ ἔργῳ καὶ λόγῳ ζημία μᾶλλον ἢ ὄφελός ἐστιν.

Ἆρ' οὖν, ἔφη ὁ Σωκράτης, ὥςπερ ἵππος τῷ ἀνεπιστήμονι μέν, ἐγχειροῦντι δὲ χρῆσθαι ζημία ἐστίν, οὕτω καὶ ἀδελφός, ὅταν τις αὐτῷ μὴ ἐπιστάμενος ἐγχειρῇ χρῆσθαι, ζημία ἐστιν;

Πῶς δ' ἂν ἐγώ, ἔφη ὁ Χαιρεκράτης, ἀνεπιστήμων εἴην ἀδελφῷ χρῆσθαι, ἐπιστάμενός γε καὶ εὖ λέγειν τὸν εὖ λέγοντα, καὶ εὖ ποιεῖν τὸν εὖ ποιοῦντα; τὸν μέντοι καὶ λόγῳ καὶ ἔργῳ πειρώμενον ἐμὲ ἀνιᾶν οὐκ ἂν δυναίμην οὔτ' εὖ λέγειν, οὔτ' εὖ ποιεῖν, ἀλλ' οὐδὲ πειράσομαι.

3. How to Make a Brother Useful.

Καὶ ὁ Σωκράτης ἔφη· Εἰ κύων σοὶ ἦν ἐπὶ προβάτοις ἐπιτήδειος ὦν, καὶ τοὺς μὲν ποιμένας ἠσπάζετο, σοὶ δὲ προςιόντι ἐχαλέπαινεν, ἂν ἐπειρῶ εὖ ποιήσας πραΰνειν αὐτόν; ἆρα οὐκ ἐπιχειρεῖς μηχανᾶσθαι, ὅπως ὁ ἀδελφός σοι ὡς βέλτιστος ἔσται;

Καὶ ὁ Χαιρεκράτης ἔφη· ὦ Σώκρατες, μὴ οὐκ ἔχω ἐγὼ τοσαύτην σοφίαν.

Λέγε δή μοι, ἔφη, εἴ τινα τῶν γνωρίμων βούλοιο κατεργάσασθαι, ὁπότε θύοι, καλεῖν σε ἐπὶ δεῖπνον, τί ἂν ποιοίης;

Δῆλον, ὅτι κατάρχοιμι ἂν τοῦ αὐτός, ὅτε θύοιμι, καλεῖν ἐκεῖνον.

Εἰ δὲ βούλοιο τῶν φίλων τινὰ προτρέψασθαι, ὁπότε ἀποδημοίης, ἐπιμελεῖσθαι τῶν σῶν, τί ἂν ποιοίης;

Δῆλον, ὅτι πρότερος ἂν ἐγχειροίην ἐπιμελεῖσθαι τῶν ἐκείνου, ὁπότε ἀποδημοίη.

Εἰ δὲ βούλοιο ξένον ποιῆσαι ὑποδέχεσθαι σεαυτόν, ὁπότε ἔλθοις εἰς τὴν ἐκείνου, τί ἂν ποιοίης; Δῆλον, ὅτι καὶ τοῦτον πρότερος ὑποδεχοίμην ἄν, ὁπότε ἔλθοι Ἀθήναζε.

4. Two Brothers should be like Two Hands or Two Feet.

Ἀδελφὼ διαφερομένω, ἔφη ὁ Σωκράτης, οὕτω διάκεισθον, ὥςπερ εἰ τὼ χεῖρε, ἃς ὁ θεὸς ἐπὶ τὸ συλλαμβάνειν ἀλλήλαιν ἐποίησεν, ἀφεμένω τούτου τράποιντο πρὸς τὸ διακωλύειν ἀλλήλω, ἢ εἰ τὼ πόδε θείᾳ μοίρᾳ πεποιημένω πρὸς τὸ συνεργεῖν ἀλλήλοιν ἀμελήσαντε τούτου ἐμποδίζοιεν ἀλλήλω. Οὐκ ἂν πολλὴ ἀμαθία εἴη καὶ κακοδαιμονία τοῖς ἐπ' ὠφελείᾳ πεποιημένοις ἐπὶ βλάβῃ χρῆσθαι; Καὶ μὴν ἀδελφώ γε, ὡς ἐμοὶ δοκεῖ, ὁ θεὸς ἐποίησεν ἐπὶ μείζονι ὠφελείᾳ ἀλλήλοιν, ἢ χεῖρέ τε καὶ πόδε καὶ ὀφθαλμὼ τἆλλά τε, ὅσα ἀδελφὰ ἔφυσεν ἀνθρώποις.

Consult Harper's *Classical Dictionary* under *Sacrificium* and *Hospitium*, and Smith's *Dictionary of Antiquities* under the same titles.

Questions to be Answered in Greek

1. What did Socrates think two brothers ought to be like?

2. How did he find these two brothers acting?

3. How did Chærecrates think he ought to treat a brother?

4. How did he say his brother had treated him?

5. Why does a man buy slaves or acquire friends?

6. If a man tries to make his friend useful, ought he to try also to make his brother useful?

7. How would you get invited to a banquet when your friend sacrifices?

8. What does a guest friend do for you when you go to his city?

9. Which is better — to have just enough while dwelling with many fellow-citizens, or to get all the property of your fellow-citizens and dwell alone?

Vocabulary of New Words

ἀγνοέω, *be ignorant of, not to know.*
ἀνεπιστήμων, ον, *ignorant, unskilled.*
ἀμελέω, *neglect.*
ἀνιάω, *distress, grieve.*
ἀρέσαι, from αρέσκω, *please.*
αρκέω, *suffice, be sufficient.*
ἀσπάζομαι, *welcome.*
ἀσφαλής, ές, *safe.*
βοηθέω, *aid.*
δεῖπνον, ου, *dinner.*
διακεῖμαι, *be disposed.*
διαφέρω, *differ.*
ἐπίσταμαι, *understand.*
ἐπιχειρέω, *undertake.*
ζημία, ας, *harm, damage.*
ἡγέομαι, *lead, think.*
θαυμάζω, *wonder.*
θύω, *sacrifice.*
ἵνα, *that, in order that.*
ἴσως, *perhaps.*
κεκτῆσθαι, from κτάομαι, *acquire.*

κύων, κυνός, dog.
λογίζομαι, consider.
μηχανάομαι, devise, contrive.
μισέω, hate.
οἰκέτης, ου, servant.
ὅπως, how, how that, in order that.
ποιμήν, ένος, herdsman, shepherd.
ποῦς, ποδός, ὁ, foot.
πραΰνω, make gentle, tame.
πρόβατα, ων, cattle, sheep.
συνεργός, όν, co-worker, helper.
τρέπω, turn.
φοβέομαι, fear.
φύω, produce.
χείρ, χειρός, ἡ, hand.
χρήσιμος, η, ον, useful.
ὠνέομαι, buy.

XIV.

Οὐ τοῖς ἀθύμοις ἡ τύχη συλλάμβανει.

Σοφοκλῆς.

Socrates Helps a Discouraged Friend

1. Hard Times in Athens.

Σωκράτης ποτὲ ὁρῶν Ἀρίσταρχον σκυθρωπῶς ἔχοντα, Δοκεῖς, ἔφη, ὦ Ἀρίσταρχε, βαρέως φέρειν τι· χρὴ δὲ τοῦ βάρους μεταδιδόναι τοῖς φίλοις· ἴσως γὰρ ἄν τί σε καὶ ἡμεῖς κουφίσαιμεν.

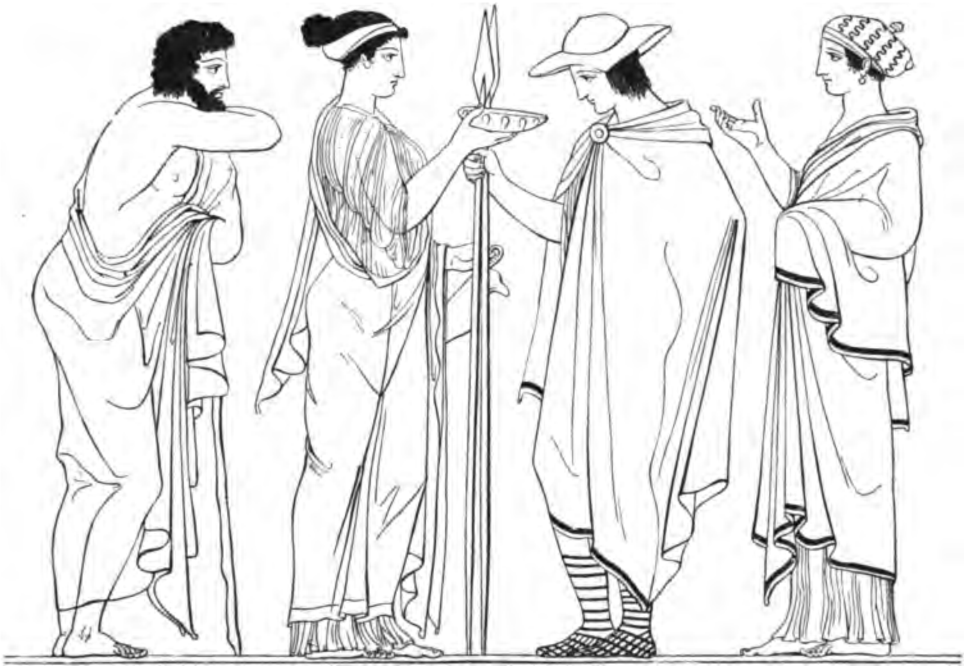
Καὶ ὁ Ἀρίσταρχος· Ἀλλὰ μήν, ἔφη, ὦ Σώκρατες, ἐν πολλῇ γέ εἰμι ἀπορίᾳ· ἐπεὶ γὰρ ἐστασίασεν ἡ πόλις, συνεληλύθασιν ὡς ἐμὲ ἀδελφαί τε καὶ ἀδελφιδαῖ καὶ ἀνεψιαὶ τοσαῦται, ὥστ' εἶναι ἐν τῇ οἰκίᾳ τεσσαρεσκαίδεκα τοὺς ἐλευθέρους· λαμβάνομεν δὲ οὔτε ἐκ τῆς γῆς οὐδέν οὔτε ἀπὸ τῶν οἰκιῶν. Χαλεπὸν μὲν οὖν ἐστιν, ὦ Σώκρατες, τοὺς οἰκείους περιορᾶν ἀπολλυμένους, ἀδύνατον δὲ τοσούτους τρέφειν ἐν τοιούτοις πράγμασιν.

No. 1. HEPHAISTOS, CLAD IN THE EXOMIS.
A Bronze Statuette Preserved in Berlin.

No. 2. FASTENING HER CHITON.
A Bronze Statue Preserved in Naples.

2. Are Slaves more Useful than Freemen?

Ἀκούσας οὖν ταῦτα ὁ Σωκράτης· Τί ποτέ ἐστιν, ἔφη, ὅτι ὁ Κεράμων μὲν πολλοὺς τρέφων οὐ μόνον ἑαυτῷ τε καὶ τούτοις τὰ ἐπιτήδεια δύναται παρέχειν, ἀλλὰ καὶ περιποιεῖται τοσαῦτα, ὥστε καὶ πλουτεῖν, σὺ δὲ πολλοὺς τρέφων φοβεῖ, μὴ δι' ἔνδειαν τῶν ἐπιτηδειων ἅπαντες ἀπολησθε;



No. 3. ATHENIANS IN THE ATTIRE OF THE AGE OF PERICLES.
A Picture on a Vase.

῞Οτι νὴ Δί’, ἔφη, ὁ μὲν δούλους τρέφει, ἐγὼ δὲ ἐλευθέρους.

Καὶ πότερον, ἔφη, τοὺς παρὰ σοὶ ἐλευθέρους οἴει βελτίους εἶναι, ἢ τοὺς παρὰ Κεράμωνι δούλους;

’Εγὼ μὲν οἶμαι, ἔφη, τοὺς παρὰ ἐμοὶ ἐλευθέρους.

Οὐκοῦν, ἔφη, αἰσχρὸν τὸν μὲν ἀπὸ τῶν πονηροτέρων εὐπορεῖν, σὲ δὲ πολλῷ βελτίους ἔχοντα ἐν ἀπορίαις εἶναι;

Νὴ Δι’, ἔφη· ὁ μὲν γὰρ τεχνὶτας τρέφει, ἐγὼ δὲ ἐλευθερίως πεπαιδευμένους.

’Αρ’ οὖν, ἔφη, τεχνῖταί εἰσιν οἱ χρήσιμόν τι ποιεῖν ἐπιστάμενοι;

Μάλιστά γε, ἔφη.

Οὐκοῦν χρήσιμά γ’ ἄλφιτα;

Σφόδρα γε.

Τί δὲ ἄρτοι;

Οὐδὲν ἧττον.

Τί γάρ; ἔφη, ἱμάτιά τε ἀνδρεῖα καὶ γυναικεῖα, καὶ χιτωνίσκοι καὶ χλαμύδες καὶ ἐξωμίδες;

Σφόδρα γε, ἔφη, καὶ πάντα ταῦτα χρήσιμα.

῎Επειτα, ἔφη, οἱ παρὰ σοὶ τούτῶν οὐδὲν ἐπίστανται ποιεῖν;

Πάντα μὲν οὖν, ὡς ἐγῷμαι.

3. What can Freemen do?

Εἶτ’ οὐκ οἶσθα, ὅτι ἀφ’ ἑνὸς μὲυ τούτων, ἀλφιτοποιίας, Ναυσικύδης οὐ μόνον ἑαυτον τε καὶ τοὺς οἰκέτας τρέφει, ἀλλὰ πρὸς τούτοις καὶ ὗς πολλὰς καὶ βοῦς, καὶ περιποιεῖται τοσαῦτα, ὥστε καὶ τῇ πόλει πολλάκις λειτουργεῖν, ἀπὸ δὲ ἀρτοποιίας Κύρηβος τήν τε οἰκίαν πᾶσαν διατρέφει καὶ ζῇ δαψιλῶς, Δημέας δὲ ὁ Κολλυτεὺς ἀπὸ χλαμυδουργίας, Μεγαρέων δ’ οἱ πλεῖστοι, ἔφη, ἀπὸ ἐξωμιδοποιίας διατρέφονται;

Νὴ Δί’, ἔφη· οὗτοι μὲν γὰρ ὠνούμενοι βαρβάρους ἀνθρώπους ἔχουσιν, ὥστ’ ἀναγκάζειν ἐργάζεσθαι ἃ καλῶς ἔχει, ἐγὼ δ’ ἐλευθέρους τε καὶ συγγενεῖς.

῎Επειτ’, ἔφη, ὅτι ἐλεύθεροί τ’ εἰσὶ καὶ

συγγενεῖς σοι, οἴει χρῆναι μηδὲν αὐτοὺς ποιεῖν ἄλλο ἢ ἐσθίειν καὶ καθεύδειν; Ἔ*μαθον δὲ, ἃ φῂς αὐτὰς ἐπίστασθαι, πότερον ὡς οὔτε χρήσιμα ὄντα πρὸς τὸν βίον, οὔτε ποιήσουσαι αὐτῶν οὐδέν, ἢ τοὐναντίον, ὡς καὶ ἐπιμεληθησόμεναι τούτων, καὶ ὠφεληθησόμεναι ἀπ' αὐτῶν;* Ἐ*ὰν δὲ αὐταῖς προστατησῃς, ὄφελος ἔσῃ αὐταῖς τε καὶ σεαυτῷ.*

Ἀ*λλά, νὴ τοὺς θεούς, ἔφη ὁ* Ἀ*ρίσταρχος, μοι δοκεῖς καλῶς λέγειν, ὦ* Σ*ώκρατες.*

4. What the Dog said to the Sheep.

Ἐ*κ τούτων δὲ ἐωνήθη ἔρια· καὶ ἐργαζόμεναι μὲν ἠρίστων, ἐργασάμεναι δὲ ἐδείπνουν, ἱλαραὶ δὲ ἀντὶ σκυθρωπῶν ἦσαν· καὶ ἔλεγον τὸν* Ἀ*ρίστιππον μόνον τῶν ἐν τῇ οἰκίᾳ ἀργὸν ἐσθίειν.* Κ*αὶ ὁ* Σ*ωκράτης ταῦτα ἀκούσας ἔφη·* Ε*ἶτα οὐ λέγεις αὐταῖς τὸν τοῦ κυνὸς λόγον; φασὶ γάρ τὴν ὄϊν πρὸς τὸν δεσπότην εἰπεῖν·* Θ*αυμαστὸν ποιεῖς, ὃς ἡμῖν μὲν ταῖς καὶ ἔριά σοι καὶ ἄρνας παρεχούσαις οὐδὲν δίδως, ὅ τι ἂν μὴ ἐκ τῆς γῆς λάβωμεν, τῷ δὲ κυνί, ὃς οὐδὲν τοιοῦτόν σοι παρέχει, μεταδίδως οὗπερ αὐτὸς ἔχεις σίτου.* Τ*ὸν κύνα οὖν ἀκούσαντα εἰπεῖν·* Ν*αὶ μὰ* Δ*ία· ἐγὼ γάρ εἰμι ὁ καὶ ὑμᾶς αὐτὰς σώζων, ὥςτε μητε ἀνθρώπους μήτε λούκους φοβεῖσθαι.* Κ*αὶ σὺ οὖν ἐκείναις λέγε, ὦ* Ἀ*ρίσταρχε, ὅτι ἀντὶ κυνὸς εἶ φύλαξ, καὶ διὰ σὲ οὐδ' ὑφ' ἑνὸς ἀδικούμεναι ἀσφαλῶς τε καὶ ἡδέως ἐργαζόμεναι ζῶσιν.*

Consult Harper's *Classical Dictionary* and Smith's *Dictionary of Antiquities* on *Chiton, Himation, Chlamys* and *Exomis.*

Questions to be Answered in Greek

1. How did Aristarchos happen to have fourteen relatives in his house?
2. How is Ceramon able to support many and yet become rich?
3. Do free people also know how to do something useful?
4. What does Nausicydes make from his barley business?
5. How do most of the Megarians make their living?
6. Do free people learn what they know with the the idea of putting their knowledge into practice and helping themselves?
7. Were Aristarchos' relatives unhappy when idle and happy when at work?
8. Did they say Aristarchos was the only idle person in the house?
9 What story did Socrates bid Aristarchos tell them?
10. Tell the story.

Vocabulary of New Words

ἄλφιτα, ων, *coarse meal, barley meal.*
ἀνεψιά, ᾶς, *cousin.*
ἀπόλλυμαι, *perish,* from ἀπόλλυμι.
ἀπορία, ας, *want, difficulty.*
ἀριστάω, *breakfast.*
ἀρνάς, *lambs.*
ἄρτος, ου, *loaf of bread, bread.*
βαρύς, εῖα, ύ, *heavy, grievous.*
βοῦς, βοός, *ox, cow.*
γυνή, γυναικός, *woman, wife.*
δειπνέω, *dine.*
δεσπότης, ου, *master.*
εἶτα, *then, thereupon.*
ἐπιμελεόμαι, *practice.*
ἔριον, ου, *wool.*
ἐσθίω, *eat.*
ἡδύς, εῖα, ύ, *sweet.*
ἱλαρός, ά, όν, *cheerful.*
ἱμάτιον, ου, *cloak, mantle.*
κουφίζω, *lighten.*
λειτουργέω, *perform and pay for public services.*
μεταδίδωμι, *share.*
οἰκία, ας, *house.*
οἶς, οιος, *sheep.*
ὁράω, *see.*
περιποιέω, *make over and above, gain.*

πλουτέω, *be rich.*
πονηρός, ά, όν, *toilsome, base.*
προστατέω, *manage for.*
σκυθρωπος, ον, *sad-looking.*
στασιάζω, *rebel, disagree.*
σώζω, *save.*
τεχνίτης, ου, *artisan.*
τρέφω, *nourish, support.*
ὗς, υιός, *swine.*
φύλαξ, ακος, *guard.*

Latin Lessons for the Ninth Grade

No. 101. A ROMAN SCHOOL.
A Wall-Painting from Herculaneum.

Number 1

Latin I

1. Puella Romana in scholā discit.

2. Puella in tabellā litteras scribit.

3. Puellæ Romanæ in scholā non ludunt.

4. Servæ puellis in scholam tabellas et capsas ferunt.

5. Tabellæ puellarum erant ligneæ et cereæ.

6. Puellæ in sellis sedēbant et litteras in ceris scribēbant.

7. Puellæ Romanæ litteras Græcas interdum discēbant et diligēbant.

8. Schola Romana primā horā incipit.

9. Tabellæ puellarum erant litterarum vacuæ primā horā, sed plenæ tertiā horā.

10. Ferulæ longæ erant in Scholis Romanis.

11. Puellæ Romanæ in viis et areis interdum ludēbant.

12. Puellæ Romanæ poetas interdum discēbant.

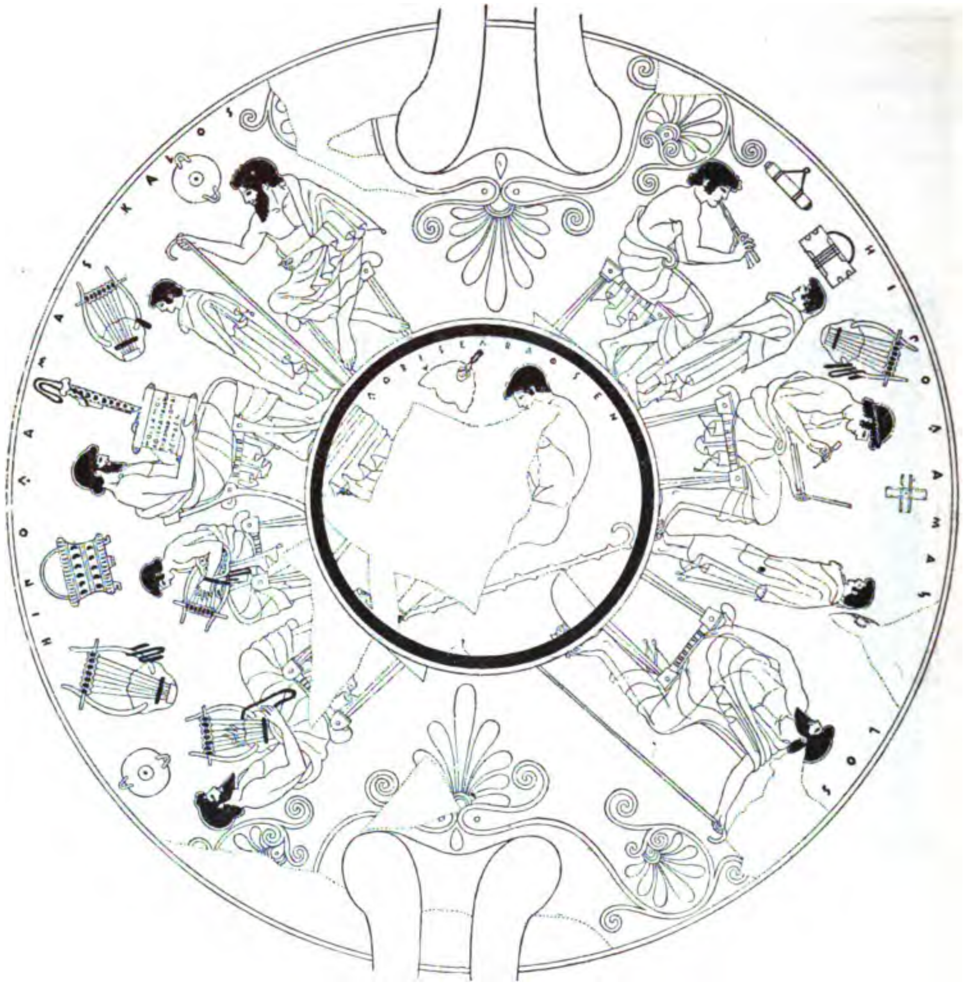
Questions to be Answered in Latin.

1. At what hour does the American school begin?

2. Do the American girls study Latin and Greek?

3. Do the American girls play in the streets and squares?

4. Did slave-women carry the boxes and tablets of the Roman girls?



No. 102. A GREEK SCHOOL.
A Vase-Painting from the Age of Pericles.

5. On what did the Roman girls write?

6. Of what materials were the tablets of the Roman girls?

7. Were there rods in the Roman schools?

8. Were there seats in the Roman schools?

9. Did the Roman girls study Greek?

10. Did they study the poets?

Latin II

1. Matrona Romana pecuniam in arcam ponit.

2. Matrona Romana in arcā pecuniam includēbat.

3. Matrona ex arcā pecuniam capit.

4. Matrona Romana non filiæ parvæ sed servæ adultæ pecuniam dat.

5. Servæ Romanæ ad aquam in viis et areis urnas vacuas ferēbant.

6. Servæ domum urnas plenas aquæ ferunt.

7. Matronæ Romanæ urnas non ferebant.

8. Candelæ Romanæ erant cereæ.

9. Villa Romana candelas paucas sed lucernas multas habēbant.

10. Serva in mensam puellæ capsam ponit.

Questions to be Answered in Latin

1. Did the Greek slave put the girl's box on the table?

2. Did the Greek slave put the boy's box on the table?

3. Did the slave-men put the money-box on the table?

4. Where did the Roman ladies put their money?

5. Did the Roman lady give money to her small daughter?

6. To whom did she give the money?

7. Did the Roman lady give money to her small son?

8. To whom did she give the money?

9. How did the Romans light their houses?

10. Did they have more candles or more lamps?

Latin III

1. Puella in ludum primā horā ibat.
2. Puellæ tabellam serva ferēbat.
3. Puellæ tabellam serva dabat.
4. Puellam in ludum serva ducēbat.
5. Puella, isne in ludum?
6. Puellā totus ludus confīdit.
7. Puellæ in ceris scribēbant.
8. Puellārum ludus non erat magnus.
9. Puellis pecuniam matrona non dat.
10. Puellas domum servæ ducēbant.
11. Puellæ, quo curritis?
12. Puellis matrona Romana confidēbat.
13. Puer et puella in ludum ibant.
14. Pueri et puellæ tabellæ erant cereæ.

15. Puerō et puellæ tabellas magister dabat.

16. Puerum et puellam in ludum matrōna mittit.

17. Puer et puella, discitisne poētas Græcas?

18. Puerō et puellā matrōna confīdit.

19. Pueri et puellæ litteras Græcas diligunt.

20. Puerōrum et puellārum ludus erat parvus.

21. Pueris et puellis ferulæ erant interdum.

22. Pueros et puellas in aream magister mittit.

23. Pueri et puellæ, diligitisne poētas?
24. Pueris et puellis magister confīdit.
25. Puellæ Romānæ litteras scribunt.
26. Pueri Romāni litteras scribunt.

27. Serva Græca puellam Romānam domum ducit.

28. Servus Græcus puerum Romānum domum ducit.

29. Servæ Græcæ puellas Romānas in ludum ducēbant.

30. Servi Græci pueros Romānos in ludum ducēbant.

Latin IV

1. Pueri et puellæ in ludo litterārum geographiam et historiam et grammaticam discēbant.

2. Libros de geographiā et historiā et grammaticā non habebant, sed in libris poetārum geographiam et historiam et grammaticam legēbant et discēbant.

3. Ludus tabulam mundi interdum habēbat.

4. Pueri Romāni numeros discēbant.

5. Cicero et alii pueri tabulas duodecim discēbant.

6. Magister in pergulā pueros docēbat.

7. Pueri lucernas in ludum interdum ferēbant.

8. Servi librarii libros scribēbant et in librario vendēbant.

Questions to be Answered in Latin

1. At what hour did the Roman school begin?

2. Did the Roman boys write Latin?
3. Did they study Greek?
4. Did they read the poets?

5. Did they study geography, history, and grammar?

6 Did they have books on geography, history, and grammar?

7. How did they study these subjects?

8. Did they have maps in the school?

9. Did they study arithmetic?

10. What famous boy studied the Twelve Tables of Roman law?

11. Did the other boys study the tables?

12. How were the Roman books made, and by whom?

13. Where were they sold?

Number 2

Latin V

1. Civis Romanus in Foro et viis togam supra tunicam gerēbat.

2. Nec Gallus nec servus togam gerēbat.

3. Romani Galliam cisalpinam togātam, Galliam transalpinam bracātam appellābant quia Galli bracas gerēbant.

4. Puer Romanus supra tunicam togam prætextam gerēbat.

5. Servi tunicas gerēbant.

6. Servi in brumā supra tunicas pænulas gerēbant.

7. Cives Romani dum rus eunt, supra tunicas pænulas gerēbant.

8. Togæ Romanæ erant laneæ.

9. Togæ prætextæ erant albæ et purpureæ.

10. Puer Romanus, postquam annos quattuordecim vixit, togam prætextam et bullam ponēbat et togam puram aut virīlem sumēbat.

11. Cives Romani dum honores petunt, togas candidas gerēbant.

Questions to be Answered in Latin

1. What did the Roman citizens wear in the Forum and street?

2. Did the Greek or Gallic slaves wear togas?

3. What did the Gauls wear?

4. What did the Roman boys wear?

5. What did the slave sometimes wear over his tunic?

6. When did the Romans wear the same wraps?

7. What was the color and material of the toga prætexta?

8. When did the boys leave off their child's dress and take the man's dress?

9. What color was the toga worn by a candidate for office?

Vocabulary of New Words

gero, 3, *bear, wear, manage.*
quia, *because.*
appello, 1, *call, name.*
bruma, ae, *winter.*
rus, ruris, *country, into the country.*
dum, *while.*
postquam, *after.*
annus, i, *year.*
quattuordecim, *fourteen.*
vivo, 3, vixi, *live, lived.*
pono, 3, *lay down, place, put.*
sumo, 3, *take, assume.*
honor, oris, *honor, office.*
peto, 3, *seek.*

Latin VI

1. Matrona Romana supra tunicam stolam gerēbat et, dum in viā est, pallam amiciēbat.

2. Stolæ pallæque erant laneæ.

3. Tunicæ erant laneæ aut lineæ.

4. Matrona filiæque Romanæ cum servis et togas et tunicas et stolas et pallas domi faciēbant.

5. Puellæ Romanæ texere et nēre discēbant.

6. Omnīs vestīs omnium familiārum Romanārum feminæ Romanæ plerumque faciēbant, itaque feminæ omnes erant sedulæ.

7. C. Iuli Cæsaris Octaviāni etiam vestīs omnīs filia et aliæ feminæ suæ familiæ conficiēbant.

Questions to be Answered in Latin

1. What did the Roman ladies wear at home? On the street?

2. What was the material of their clothing?
3. Who made the clothing?
4. What did the Roman girls learn to do?
5. Why were the Roman women busy?
6. What famous man usually wore clothes made by the women of his household?

Vocabulary of New Words

amicio, 3, *throw around, wrap around.*
vestis, is, f., *clothing, garments.*
omnis, *all.*
femina, ae, *woman.*
plerumque, *generally, usually.*
sedulus, a, um, *busy.*
suus, a, um, *his own, her own, its own, their own.*
conficio, 3, *make completely.*

Latin VII

A Bad Schoolmaster Punished

Dum Camillus cum exercitu Romano urbem Falerios obsidet, ludi magister pueros Faliscos in castra Romana duxit. Camillus perfidiam magistri non dilexit. "Arma habemus," dixit, "non adversus, pueros sed adversus viros armātos." Postquam magistri perfidi bracchia post tergum restrinxit virgas dedit pueris, qui suum magistrum in urbem Falerios ēgērunt. Statim Falisci, beneficio non armis victi, portas Romanis aperuērunt.

Vocabulary of New Words

urbs, urbis, f., *a city.*
obsideo, 2, *sit down against, besiege.*
Castra, orum, *camp.*
perfidia, *treachery.*
perfidus, *treacherous.*
arma, orum, *arms, weapons.*
amātus, a, um, *armed.*
adversus, prep., *against.*
post, prep., *after, behind.*
tergum, i, *back.*
bracchium, i, *arm.*
virga, ae,= ferula.
ago, 3, ēgi, *drive, drove.*
statim, *at once.*
porta, ae, *gate.*
beneficium, i, *kindness.*
victus, a, um, *conquered.*
aperio, 4, aperui, *open, opened.*

To be Answered Orally in Latin

1. Quis fuit Camillus?
2. Quid fēcit magister Faliscus?
3. Quid dixit Camillus?
4. Quid fēcit Camillus?
5. Quid fēcērunt pueri Falisci?
6. Quid fēcērunt viri Falisci?

Latin VIII

The Tragic Fate of a Roman Schoolgirl

Dum Decemviri tabulas duodeceim scribunt, Virginia, puella Romana, in Forum ibat, namque ibi in pergulā litterārum ludi erant. Appius Claudius, unus ex Decemviris, eam puellam amavit, quam ubi in alio modo capere non potuit, affirmāvit Virginiam sui clientis esse servam. Multi ad clamorem nutrīcis puellæ concurrēbant et pater suus advēnit; sed ubi nihil auxiliī adversus Appium Claudium vīdit, cultro suam filiam interfēcit.

Vocabulary of New Words

unus, a, um, *one.*
amo, 1, avi, *love, loved.*
modus, i, *way, manner.*
possum, potui, *am able, was able.*
affirmo, 1, avi, *affirm, assert.*
cliens, entis, *retainer, dependent.*
clamor, oris, *cry.*
nutrix, īcis, *nurse, attendant.*
pater, tris, *father.*
video, 2, vīdi, *see, saw.*
interficio, 3, fēci, *kill.*

Questions to be Answered Orally in Latin

1. Quid faciebant Decemviri?
2. Cur Virgīnia in Forum vēnit?
3. Quid fēcit Appius Claudius?
4. Quid fēcit nutrix puellæ?
5. Quid fēcit pater?

Applied Algebra

George W. Myers

In our study of the equation we have already had frequent need for the resolution of numbers into factors. Many type forms of algebraic expressions will be met repeatedly in our later work with equations, and in many cases a knowledge of their factors will be of the greatest advantage. A degree of skill in the detection of factors is the surest possible guarantee of pleasurable and rapid progress in all advanced mathematical work. An intimate acquaintance with the difficulties of hundreds of students of applied mathematics convinces the writer that an imperfect understanding of the principles of factoring is one of the two or three most fruitful sources of trouble in all algebra. The reason for this is, however, not to be sought in the difficulty of the subject; but rather in the incessant recurrence of the necessity for a few ideas which are badly confused in the student's mind.

To illustrate the great advantage of the use of factoring a few exercises are given here.

Exercises

(1) Verbal statement. The difference of two numbers is 1, and the difference of their squares is 9; find the numbers.

Symbolic statement. $x-y=1$ and $x^2-y^2=9$; required x and y.

(2) Verbal statement. The sum of the reciprocals of two numbers and also the difference of the reciprocals of their squares is 5; find the numbers.

Symbolic statement. $1/x+1/y=5$ and $1/x^2-1/y^2=5$; find x and y.

(3) Verbal statement. The sum of two numbers is 5 and the sum of their cubes is 35; find the numbers.

Symbolic statement. $x+y=5$ and $x^3+y^3=35$; find x and y.

(4) Verbal statement. The sum of the cubes of two numbers is 126 and the sum of their squares diminished by their product is 21; find the numbers.

Symbolic statement. $x^3+y^3=126$ and $x^2-xy+y^2=21$; find x and y.

(5) Verbal statement. The difference of the 5th powers of two numbers is 242 and the difference of the numbers is 2; find the numbers.

Symbolic statement. $x^5-y^5=242$ and $x-y=2$; find x and y.

(6) $\frac{5x+1}{3}+\frac{19x+7}{9}-\frac{3x-1}{2}=\frac{7x-1}{6}$; find x.

(7) $\frac{2x+1}{2x-1}-\frac{8}{4x^2-1}=\frac{2x-1}{2x+1}$; find x.

(8) $\frac{4}{x+2}+\frac{7}{x+3}-\frac{37}{x^2+5x+6}=0$; find x.

(9) $\frac{x}{a-b}-\frac{5a}{a+b}=\frac{2bx}{a^2-b^2}$; find x.

(10) $\frac{(a^2+2ab+b^2)}{a+b}x+\frac{3a^2-3b^2}{a-b}x-\frac{2a^3+2b^3}{a^2-ab+b^2}x$
$=\frac{ac+bc-ad-bd}{c-d}$; find x.

(11) $\frac{x^3-y^3}{x^2-xy+y^2}\times\frac{x^3+y^3}{x^2+xy+y^2}\times\left(1+\frac{y}{x-y}\right)=$
$x+y$; find x.

Remark I.—Require the student to supply the verbal statements for 6, 7, 8, and 9. In practical life the problems to be solved are usually given in their verbal form, and much attention should be given to training the student to pass easily from the verbal to the symbolic form of statement and *vice versa*.

Remark II.—It is intended that the teacher, not the pupil, shall solve these problems to illustrate their simplicity by the aid of factoring.

Attention should be called to the fact that the first step in the solution of all of the first five exercises is to divide the equations, member by member, and that this division, by the aid of factoring, can be performed by *inspection*.

Factoring. The subject of factoring may be developed from three simple principles:

Definition: A polynomial is an algebraic expression containing two or more terms.

Principle I.—A factor of every term of any polynomial is a factor of the polynomial.

Illustration: $12+27-9=3\times4+3\times9-3\times3=3(4+9-3)$; $ax+ab-ac=a(x+b-c)$, etc.

Prove this principle.

Principle II.—The difference of any two numbers is a factor of the difference of any two positive integral powers of the numbers.

Illustration: $a-b$, $c-d$, $x-y$, $a-z$, $y-3$, are factors respectively of a^3-b^3, c^4-d^4, x^2-y^2, a^5-z^5, y^4-81.

Prove this principle.

Principle III.—If an algebraic expression becomes 0 when any number in it is replaced by another, the difference between the two numbers is a factor of the expression.

Illustration: If, in $7^3-3\times7^2+4\times7-4\ (=220)$, seven is replaced by 2, we have $2^3-3\times2^2+4\times2-4=0$. Hence $7-2=5$ is a factor of 220. If in $a^2-2ab+b^2$, a is replaced by b, the polynomial becomes 0. Hence $a-b$ is a factor of it.

Prove this principle.

Show that all the typical forms such as $a^2+2ab+b^2$, a^2-b^2, x^2+ax+b, etc., as well as the troublesome forms, x^n-y^n, x^n+y^n, come under this principle III.

Fractions.

Exercises 6 to 11 above are fractional in form. Before the value of the unknown number can be found the equation must be cleared, or freed, of the fractions. Most equations met with in practice involve fractions. In mechanics, the problems to be solved usually require as a preliminary step the differentiation, or integration, of some expression, and then the reduction and simplification of the results through the principles underlying fractions in algebra. The preliminary step is usually performed by the student with but little difficulty; the simplifying of the fractional and radical forms is the source of the greatest confusion. Some of the principles and notions which constitute the groundwork of the mechanics of materials are given here to show the practical importance of knowing how to treat equations which contain fractions. Sufficient explanation of the meaning of the forms used will be given to make the student feel their significance.

A study of *involution* and *evolution* will be made before factoring is completed.

Mechanics of Materials.

In designing beams the following equation is fundamental:

$$S=\frac{Mc}{I},$$

where S denotes the unit-stress in the fiber, M, the maximum statical moment, c, the distance from the remotest fiber of the section of the beam to the neutral plane, and I is the moment of inertia of this section.

I and c are here tabulated for beams of various forms and dimensions of cross-section.

CROSS-SECTION.	DIMENSIONS.	VALUE OF I.	VALUE OF c.	REMARKS.
Rectangle	Base, b; depth, d.	$\frac{bd^3}{12}$	$\frac{d}{2}$	
Circle	Diameter, d.	$\frac{\pi d^4}{64}$	$\frac{d}{2}$	Circle solid.
Triangle	Base, b; depth, d.	$\frac{bd^3}{36}$	$\frac{2}{3}d$	
Ellipse	Axes, a and b.	$\frac{4ab^3}{64}$	$\frac{b}{2}$	b vertical.
Square	Side, d.	$\frac{d^4}{12}$	$d\sqrt{\frac{1}{2}}$	Diagonal vertical.
I-beam	Base, b; depth, d.	$\frac{bd^3-(b-t')(d-2t)^3}{12}$	$\frac{1}{2}d$	Flange, t; web, t'.
⊥-beam	Base, b; depth, d; area, A.	$\frac{bd^3-(b-t')(d-t)^3}{3}-Ac^2$	$\frac{\frac{1}{2}t'd^2+t(b-t')(d-\frac{1}{2}t)}{t'd+t(b-t')}$	Flange, t; web, t'.
Circular	Diameters, d and d^1.	$\frac{\pi(d^4-d'^4)}{64}$	$\frac{d}{2}$	Hollow.

To see the use of the foregoing, design a hollow circular wrought-iron beam of 12′ span to carry a uniform load of 320 lbs. per lineal foot, thickness of metal to be ¾″.

Here we have $d'=d-\frac{3}{2}''$ and taking the values of I and c for this type of beam from the table, and writing the equation (A) in the form $I=\frac{Mc}{S}$ and putting $M=320\times6=1920$, $S=10000$ (the safe unit-stress for wrought iron):

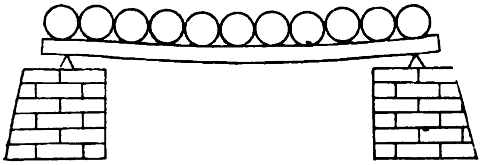
$$\frac{\pi}{64}\left(6d^3-\frac{27}{2}d+\frac{27}{2}d-\frac{81}{16}\right)=\frac{1920\times3\times12d}{2\times10000}$$

and this readily simplifies to

$$96d^3-81d^2-920d-81=0,$$

and from this cubic d must be found. By the methods of higher algebra d is found to lie between 5.1 and 5.2.

A few more practical equations will be added here to show the range of algebraic work needed for the study of applied mechanics. The mechanical meaning of these equations will be fully explained and a careful algebraic study of them will be made.

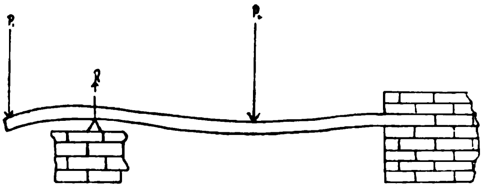


For a simple beam, uniformly loaded, we have:

$V=-wx+\frac{1}{2}wl$ (equation for vertical shear).

$M=\frac{1}{2}wlx-\frac{1}{4}wx^2$ (equation of moments).

$y=\frac{w}{24EI}(-x+2lx-lx)$ (equation of the elastic curve).

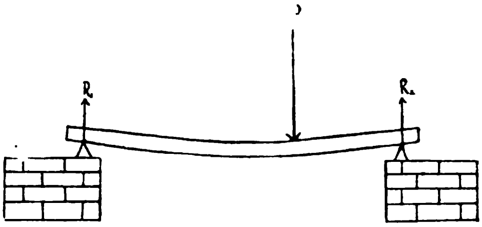


For a simple beam with concentrated loading:

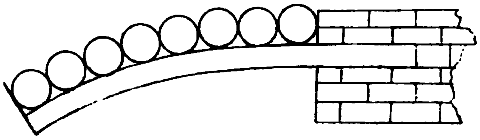
$V=-wx+R_1-\Sigma P$ (equation for vertical shear).

$M=Rx-P_1(x-a)$ (equation of moments).

$y=\frac{P}{48EI}(4x^3-3l^2x)$ (equation of the elastic curve).



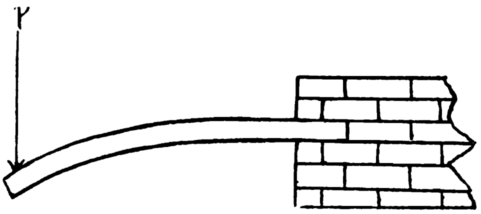
Load distant kl from left end.
$y=\frac{1}{EI}(\frac{1}{6}Rx^3+C_1x+C_2)$, elastic curve on left of load.
$y=\frac{1}{EI}(\frac{1}{6}Rx^3-\frac{1}{6}Px^3+\frac{1}{2}Pklx^2+C_3x+C_4)$, for curve on right.



For a cantilever beam, uniformly loaded:

$M=-Px-\frac{1}{2}wx^2$ (equation of moments).

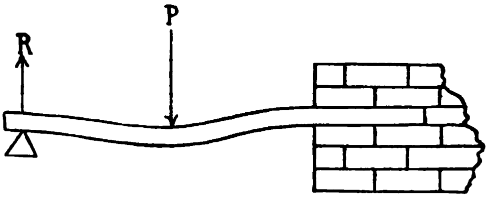
$y=\frac{4wl^3}{24EI}x-\frac{w}{24EI}x^2$ (equation of the elastic curve).

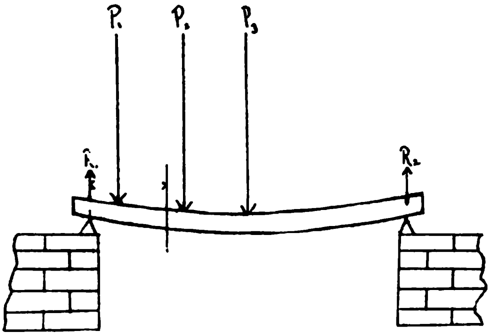


For a cantilever with a single load P:

$y=\frac{P}{6EI}(3l^2x-x^3)$ (equation elastic curve).

Point out which of the foregoing equations are included in the type forms of November outlines and which are cubics and quartics, and give their types.





The following enumeration includes the values of the maximum deflection, Δ, in beams of various types:

For a cantilever loaded at the end with W:
$\Delta=\frac{1}{3}\cdot\frac{Wl^3}{EI}$.

For a cantilever loaded uniformly with W:
$\Delta=\frac{1}{8}\cdot\frac{Wl^3}{EI}$.

For a simple beam loaded at the middle with W: $\Delta=\frac{1}{48}\cdot\frac{Wl^3}{EI}$.

For a simple beam uniformly loaded with W:
$\Delta=\frac{5}{384}\cdot\frac{Wl^3}{EI}$.

For beams to be of uniform strength throughout it is necessary that the cross-sections shall vary with the fiber stress.

For a simple beam loaded at the middle and of constant breadth:

$$d^2=\frac{3P}{Sb}x \text{ (parabolic profile).}$$

For same with constant depth:

$$b=\frac{3P}{Sd^2}x \text{ (triangular or trapezoidal plan).}$$

Same beam uniformly loaded and constant breadth:

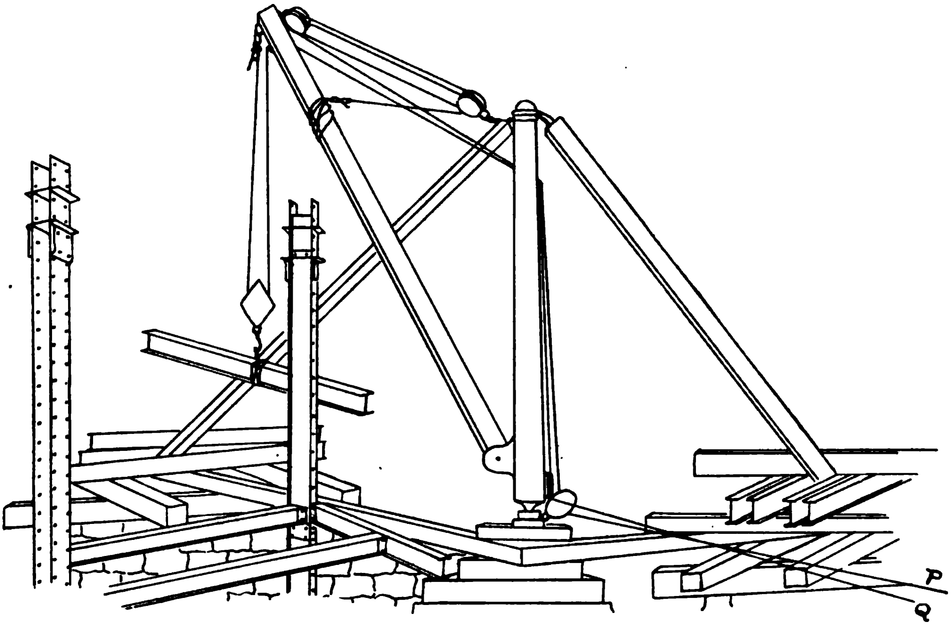
$$d^2=\frac{3w}{Sb}x \text{ (parabolic profile).}$$

Same beam uniformly loaded and of constant depth:

$$b=\frac{3w}{Sd^2}(lx-x^2 \text{ (parabolic plan).}$$

Now make a full study of fractions, using fractional equations largely. In connection with this study bring out the real motive of greatest common divisor and least common multiple and teach these subjects here. Prove that the familiar method of successive division gives the greatest common divisor.

We shall next develop the theory of exponents and logarithms, the latter immediately after the former.



DERRICK.

Applied Trigonometry

The force P raises, lowers, and supports the boom while Q raises and lowers the load. If the load supported by the derrick in the cut is a 12" steel I beam, 20' long, and weighing 50 lbs. to the running foot, what members of the derrick are in tension? In compression? In shear?

Suppose the boom to be 40' long, the guys to be 42', and the upright 30', what are the strains in the ropes, in the boom, and in the guys when the boom is inclined to the upright at an angle of 30°? Of 45°? Of 60°? Of 90°?

Answer the last question (a) when the boom is in the vertical plane of either guy and the upright, (b) when the vertical plane of the boom and upright is midway between the planes of the guys and the upright.

With each of the inclinations of the boom mentioned in the next to the last question, what is the horizontal thrust at the foot of the upright?

What are the forces tending to separate each of the two pulley-blocks at the base of the upright from the upright?

If the boom is of pine and is square in section, what dimensions should it have to carry the load with a factor of safety of 3? (Use for the ultimate compressive strength of pine 8000 lbs. per square inch.)

If the section is 14" square, what is the factor of safety?

If the maximum load is a 12" steel I beam, weighing 50 lbs. per running foot, what is the factor of safety?

For the inclinations of the boom to the upright mentioned above what would the strains be if the I beam were replaced by a block of granite 6'×5'×4'? (Granite weighs on the average about 170 lbs. per cubic foot.)

Suppose a green pine tree with dense foliage to be 50' tall, the butt 18" in diameter, and the distance from the ground to the lower limbs 8'. Suppose the widest part of the bowl is 14' in diameter. What will be the moment of the force of a wind blowing against the tree at the rate of 100 miles per hour about a section 2' above the surface of the ground?

NOTE.—This velocity, which is the maximum value used by architects, produces a pressure of 50 lbs. per square foot.

What must be the stress in the fibers of the section indicated to resist overturning?

Taking the ultimate tensile strength of green pine to be 12,000 lbs. per square inch, would the tree break off at the section under the force of such a storm?

Numerous trigonometric exercises will be obtained from the exercises at the end of *Applied Mathematics* in the November COURSE OF STUDY.

Pedagogic School

ALGEBRA FOR THE SEVENTH AND EIGHTH GRADES

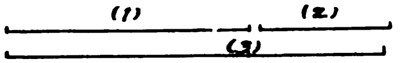


FIG. 1

1. If line 1 is 1 inch long and line 2 is ½ inch long, and when laid down along line 3, as shown in the figure, they reach just as far as line 3, how long is line 3?

Direction: Write your full answer in symbols, thus:

1 inch+½ inch=1½ inches.

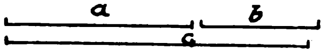


FIG. 2

2. The length of one line is a inches, of another is b inches, and of a third is c inches. When the first two are put on the third, as in the figure, they exactly cover it. How long is c? Write your answer in symbols as in Exercise 1. This is called adding the lines.

How would you subtract a and b?

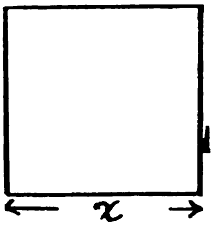


FIG. 3

3. One side of the square is x. How long is a string that will just reach around it?

REMARK.—Five times one x is written $5x$ and is read five x.

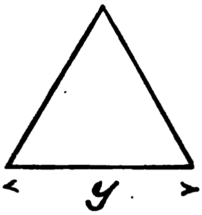


FIG. 4

4. The sides of the triangle are all equal to y (equilateral triangle). How long is a line that will just reach around it?

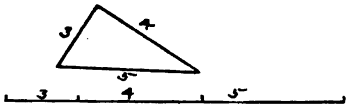


FIG. 5

5. If the sides are as shown and the triangle broken at a corner and straightened out into a line, how long would the line be? Write your answer in symbols.

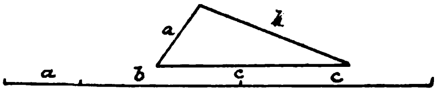


FIG. 6

6. The sides of the triangle are of the lengths shown in the figure. If the triangle were opened at one corner and straightened out into a line, how long would the line be?

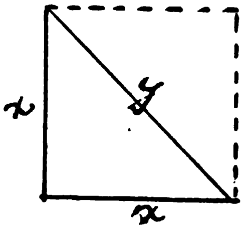


FIG. 7

7. Sides as shown in the figure. How far is it around the triangle?

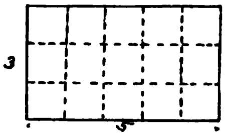


FIG. 8

8. How far is it around the figure?

9. What is the area?

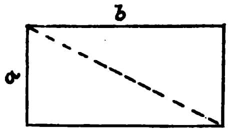


FIG. 9

10. What is the area?

11. What is the area of the oblong? Cut it with a diagonal. What is the area of one part?

REMARK.—The product of two different letters is indicated by writing them side by side. Thus xy means the product of x and y.

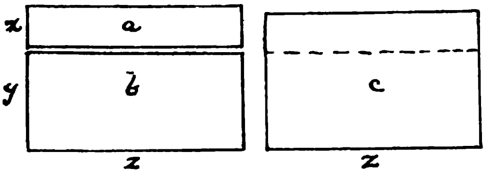


FIG. 10

12. The two oblongs a and b are put together into one as indicated. How high is c?

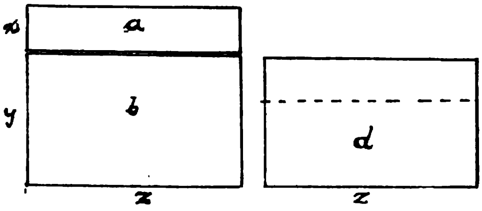


FIG. 11

13. If an oblong as large as a is cut from the oblong b as shown, leaving oblong d, how high is d?

REMARK.—Remember we indicate the difference of 6 and 2 thus: 6—2.

14. What is the area of a? of b? of c? of d?

REMARK.—5 times x is written $5x$.

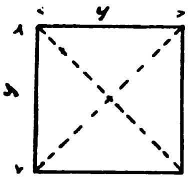


FIG. 12

15. What is the area of the square?

REMARK.—$a \times a$ is written a^2.

16. Cut the square across with a diagonal. What is the area of one part? Of the other part?

17. Cut it across with another diagonal. What is the area of one of the four parts formed?

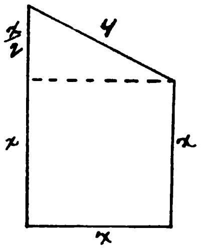


Fig. 13

18. How far is it around this figure? How long is the longest side? What is the area of the figure?

Definition: The expression *a*/*b* means the quotient of *a* divided by *b*.

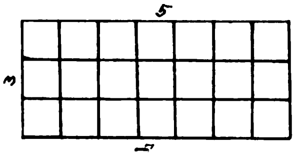


Fig. 14

19. What part of the oblong is one horizontal row of squares? One vertical row? What part of the oblong is one small square?

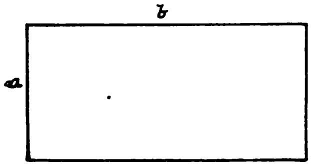


Fig. 15

20. What part of the oblong is one horizontal row of square units? One vertical row? What part is one square unit? How far around the oblong?

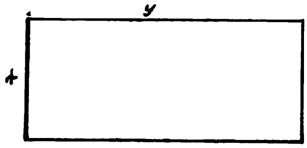


Fig. 16

21. What part of the oblong is one square unit? One horizontal row of them? One vertical row? How far around the oblong?

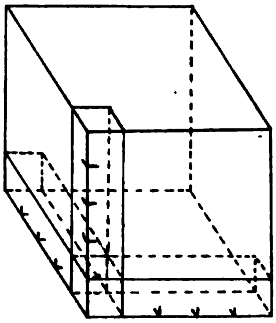


Fig. 17

22. What is the volume of the cube? How many small squares in one face? How many small cubes in one horizontal layer? What part of the large cube is one small cube?

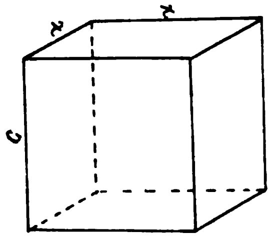


Fig. 18

23. What is the volume? What is the area of a face? What part of the large cube is one small cube?

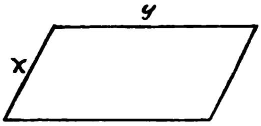


Fig. 19

24. How far is it around the parallelogram? How far is it half way round? One-third of the way round? One *a*th of the way round?

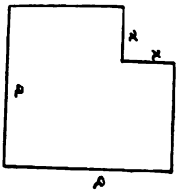


Fig. 20

25. What is the perimeter of the figure?

Definition: Perimeter is the sum of the boundary lines.

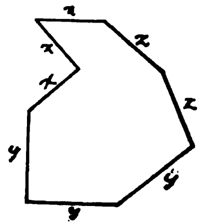


FIG. 21

26. What is the perimeter?

Definition: The parts of your expression which are connected by the plus signs are called the *terms*. They are also called terms when one or more of the signs are minus.

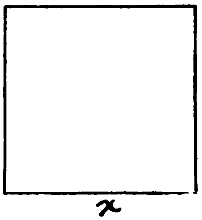


FIG. 22

27. Measure the perimeter of the square with a scale calling ¼″ = 1′, and write an equation to find x. What is the value of x? Of $3x$?

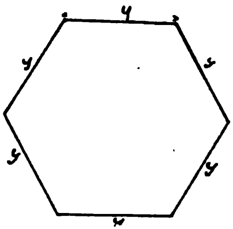


FIG. 23

28. Measure the perimeter and find y.

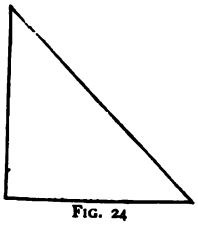


FIG. 24

29. If the area of the right triangle is 32, what is x? (See Exercise 15.)

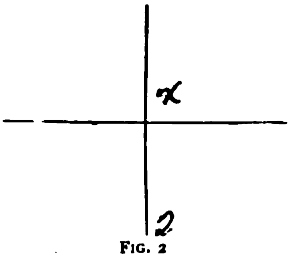


FIG. 2

30. Supposing the two lines to intersect so that all the four angles are equal; denoting one of the angles by x, what will represent the sum of all four?

NOTE.—In this case the lines are said to be *perpendicular* and the angles are right angles.

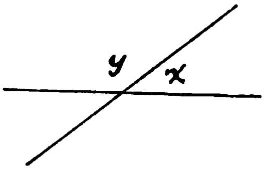


FIG. 26

31. Draw on paper two lines not perpendicular. Cut the paper along the lines and notice what angles will fit over one another. If the angles are designated as in the drawing, what will designate the sum of all four?

What will represent the sum of each pair of equal angles?

What will represent the sum of the two angles below the horizontal line?

What will represent the sum of any two angles lying on the same side of either line?

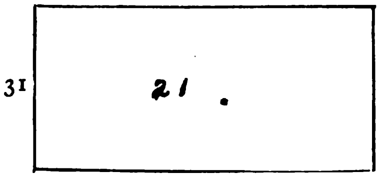


FIG. 27

32. The area of the oblong is 21 square inches and the height is 31 inches. What is the length of the base?

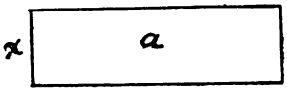


FIG. 28

33. The area of the oblong is a square inches and the height is x. How long is the base?

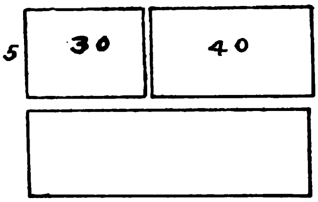


FIG. 29

34. The area of the first oblong is 30 square inches and of the second 40 square inches. Both are 5 inches high. The two are pushed together into one oblong with the same height. How long is the large oblong?

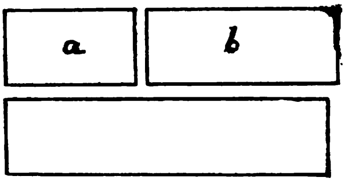


FIG. 30

35. If the area of the first oblong had been a of the second b, and if the altitude of all had been c, how long would the third oblong have been?

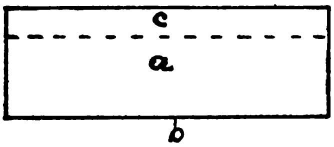


FIG. 31

36. If from an oblong whose base is b inches and whose area is a square inches, a strip is cut off parallel to the top, whose area is c square inches, how high will the oblong be which is left? How broad is the strip?

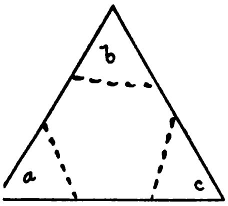


FIG. 32

37. Draw an equilateral triangle. With a protractor measure one of the angles (corners) and fit angle a over angle b. Which is the larger? Write what your experiment proves in symbols. Fit angle a over angle c. How do they compare in size? Symbolize what your exponent shows. Both taken together show what?

REMARK.—Study your protractor and notice its shape; where the center is; what part of a full circle it covers; how it is graduated.

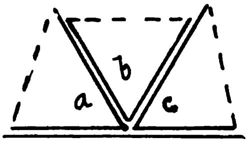


FIG. 33

38. Place the loose corners of the triangle of Example 36 as shown here with their vertices all at a point: how much of the plane around the point will they cover? How many degrees? What equation does this suggest?

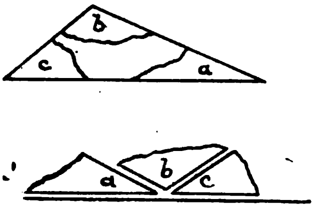


FIG. 34

39. Draw on paper a triangle of any irregular shape and cut, or tear, off the angles. Place these angles around a point o as shown. What part of the plane about the point do they fill? Denoting the angles as in the figure, write an equation for the sum of the angles in degrees.

40. Repeat this operation for several triangles of various shapes. What is the sum of all the angles of any triangle? Letting the angles of any triangle be denoted by a, b and c, what equation can you write for their sum?

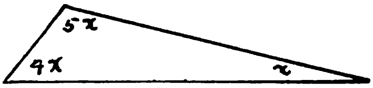


FIG. 35

41. The smallest angle of the triangle is x. If the next larger is four times as large as this and the largest is five times as large, what will denote the other two angles? The sum of all the angles will be denoted by what? To how many degrees is this equal?

42. From what has been said can you tell how many degrees there are in the sum of the two angles of the figure? Call the small angle x. What will represent the large one? If the large one be called y degrees, how many degrees in the small one?

Definition: When the sum of two angles is equal to 180°, each angle is said to be the supplement of the other.

43. What is the supplement of 60°, of 100°, of 80°, of 67°, of y degrees? Of a degrees? Of $x+y$ degrees?

44. Referring to Exercise 40, can you find all three angles of a triangle if the largest is three times the smallest and the second largest is twice the smallest? Denote the smallest angle by x.

The Library in the School

Irene Warren Frances Simpson

It is always difficult to outline any subject in a general way, and so it is with the subject of school libraries, their function in the schools, and relations to other libraries. As there are no two people or communities alike, so there are no two schools and no two libraries with exactly the same needs. There are, at present, many school libraries of from three hundred to one thousand volumes, tucked off in dark corners or shelved in the principal's office. The books are in bad condition, the editions are out of date, there is no plan of classification, no catalog or index, and no attempt to put the books to their best use. Moreover, there generally seems to be a difficulty in obtaining funds to keep a good library in working order. The question then arises, Should there be a permanent collection of books permanently located in a school?

Certain books are at all times necessary for use in the same grade; such books we will call reference books. In the primary grades these would be few, but they increase in number as new subjects are taken up. Every room should at least have a good dictionary and cyclopedia. These should be owned by the school board. A number of copies of the same books forming sets of books used for supplementary reading should also be owned by the Board of Education. By a little adjustment of the curriculum it would be possible to furnish considerable variety of reading without great duplication.

There are still a great many books necessary for school use. The next problem is to find out what state and city privileges are possible. The laws regarding school libraries vary in the different states. It is recommended that a careful examination of those in Illinois, Wisconsin, and New York be made. In a number of the states there are library commissions, where information regarding the establishment, maintenance, and organization of libraries can be obtained. The library commissions have charge of the traveling libraries, which may be a great help, especially to schools in country districts.

In the cities the closest possible relation should exist between the public library and the public school. At the present time this relationship varies widely in different cities. It is universally admitted that a close relationship is advantageous, and that not until the public library is considered a part of the great educational plan will it accomplish its best work. In some cities one book for each child in each room is sent from the public library and allowed to remain a term if desired, or to be exchanged when through with. It seems economical to have the general collections furnished by the public library because the public libraries are open the year round from early morning until late in the evening. This means that while the books are in good condition and the editions are in date a larger number of people can be served. The library force is also able to classify, catalog, and put the collection in better shape for use. It is impossible to more than touch on the great possibilities of the development of the relationship between schools and libraries in this outline. A whole number will be devoted to it later.

The first problem in the establishment of a school library is its function in the school and the community. The first step is to ascertain whether there is a public library in the town and what assistance it will give; what private libraries are available for the students' use; and what the general condition of literature is in the homes of the students. These three points must widely influence the choice of books and the regulations regarding their use.

The necessity for libraries in institutions for higher learning has been granted from the beginning, at least in this country, since the ten Connecticut ministers contributed the forty volumes for the founding of Yale University; but it is within comparatively recent years that libraries have been considered necessary for secondary and graded schools. The collections are still small, and therefore often not seriously considered, in spite of the fact that the less money a school has to put into its library, the more carefully the books should be selected. A small library should only be despised when it contains inferior books, or is not used to a good advantage. The smaller the collection the more carefully it should be catalogued and analyzed and made to do the greatest possible work.

The books should be shelved where they are easily accessible to the children. The library should be open as much as possible outside of school hours. There should be no age limit; but the children should be allowed to take books home as soon as they can write their names. The children should have a certain amount of time each week in the library for study. This training should begin very early, preferably in the kindergarten, so that the child will learn the etiquette of the library, to respect the rights of readers, and to handle the books with ease and without fear. He should also be taught to handle books with care, and not to mark or tear them. The library in its turn should be careful to deface the book as little as possible with its mark of ownership; care on the part of the library will inspire care in the borrower. Many libraries use the following story on bookmarks, and it has been used as a reading lesson in the lower grades.

What a Book Said

Once on a time a Library Book was overheard talking to a little boy who had just borrowed it. The words seemed worth recording, and here they are:

"Please don't handle me with dirty hands. I should feel ashamed to be seen when the next little boy borrowed me.

"Or leave me out in the rain. Books can catch cold as well as children.

"Or make marks on me with your pen or pencil. It would spoil my looks.

"Or lean on me with your elbows when you are reading me. It hurts.

"Or open me and lay me face down on the table. You wouldn't like to be treated so.

"Or put in between my leaves a pencil or anything thicker than a single sheet of thin paper. It would strain my back.

"Whenever you are through reading me, if you are afraid of losing your place, don't turn down the corner of one of my leaves, but have a neat little Bookmark to put in where you stopped, and then close me and lay me down on my side, so that I can have a good comfortable rest.

"Remember that I want to visit a great many other little boys after you are through with me. Besides, I may meet you again some day, and you would be sorry to see me looking old, and torn, and soiled. Help me to keep fresh and clean, and I will help you to be happy."

One of the greatest problems a school has after the library has been obtained is that of organization and management. In a large city it would be found advantageous to have one person employed whose special work should be to care for the school libraries and help the teachers in the bibliographical side of their work. It does very well to say that teachers should know the latest and best books; but a librarian knows that it takes all of his time to keep up in a very meager way with the tremendous production of literature, and believes it is impossible for a teacher to carry it as extra work. One teacher with student assistants in every school should be assigned time for the care of the library. Such a teacher could gain enough of the principles of library economy to run a school library to advantage by attending a summer school in library economy or in the extension course offered by this Institute. Every school that trains teachers should give enough library economy to enable its students to organize and administer a school library and use libraries and books economically.

The past reading of each child should be examined on his entering school, the results recorded, and his development watched and redirected by the teacher as carefully as the child's physical conditions are cared for in the modern school. The teacher should be constantly seeking to find out what children read, what is best for them to read, and how to interest them in the best literature.

The librarian should know in advance the subjects to be studied in the school. In the outline of the work published by the superintendent of schools, at least the best pedagogical books for the teachers should be given. The librarian should look ahead and see that he will be able to fill the wants. For each subject studied a reading list should be made. The librarian may most economically and advantageously prepare such a list by collecting the material, and placing a slip at the right page when it is a part of a book. The teacher can tell at a glance whether the book is what she wants. A reading list can be made. An attractive and appropriate poster should be designed by the children of the room in which the reading list is used, to which the reading list is attached. These poster reading lists are then bulletined in the library, and if so desired a duplicate list is bulletined in the room. They can be exchanged with other schools or loaned to the public library. There should be full classified, and if possible, annotated reading lists made for Hallowe'en, Thanksgiving, Christmas, and the various holidays, lists of good books for vacation reading, and lists of books on subjects of lectures and concerts given in the town. All of these should be carefully indexed, and when they have served their immediate need, filed for use from year to year, so that the teacher's future task is merely to select and add to the lists.

At the beginning of every school year the librarian or teacher in charge of the library should take the students in groups into the library and explain the arrangement of books on the shelves, the general plan of classification, the catalog and how to use it, the rules and regulations of the library, and what he expects of the students and what they may expect of him. A course in library economy based on the one given in the July COURSE OF STUDY should be given in the Normal School, a similar course adapted to the needs given in the High School, and at least some bibliographical work in the grades.

Teachers may be of great help to one another and to the librarian by reporting any good articles or books which come out and which they know will be of value to a certain teacher or class. A small regulation signed card, giving author, title, and exact paging — if a magazine, the date and number, and the name of the person for whom it is intended—is found advantageous. These should be handed to the librarian, so that records of material can be made in the library when necessary, and then sent to their proper destination.

Nor is the teacher's duty ended when she has her school fairly well supplied with books. It is her duty to see that the child knows the library privileges of the community and has books in his home. Sometimes neither the school nor the public library is able to reach the home life. The Home Library—a case of twenty good readable books sent into the home of the child, with a friendly visitor to meet the child and ten of his friends each week—has proved successful in Boston, Pittsburg, Albany, and Chicago.

Students who are trained readers, able to choose the best written and best made books, will demand better books and better writers.

Reference Books

Koopman, *Mastery of Books*, American Book Company.

N. E. A. Library Section, Report for 1899.

Manual Training

Ira M. Carley Cora Champlin

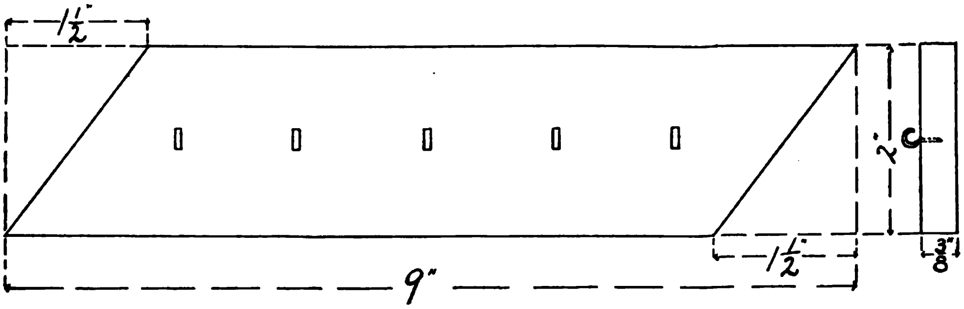


Fig. 1. KEY-RACK.

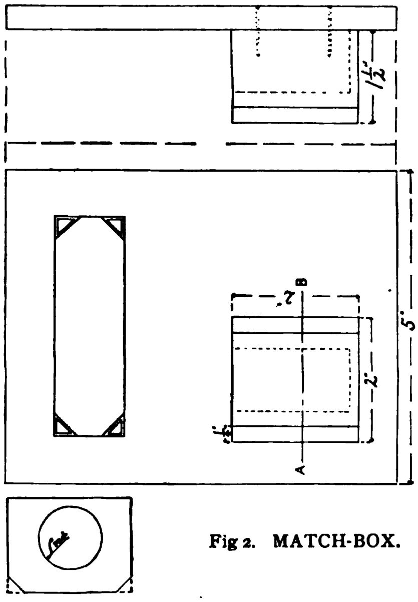


Fig 2. MATCH-BOX.

In this number are presented drawings of some of the objects to be used as suggestions for the Christmas handwork in the lower grades.

As was stated in the November number of the Course of Study, the choice of what each pupil shall make as a Christmas gift is left, as far as is practicable, to the individual himself.

For the benefit of those pupils who have no definite preference, and for those who need help in choosing, a number of pieces of work, adapted to the ability of the children, are left for several days where they may be examined by all the pupils. In the three lowest grades, as the pupils depend

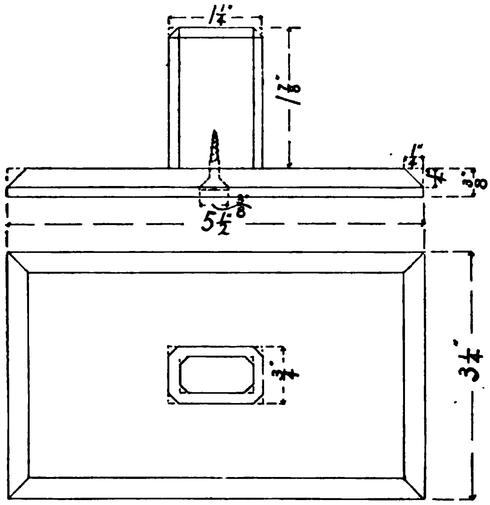


Fig. 3. BLOTTER-PAD.

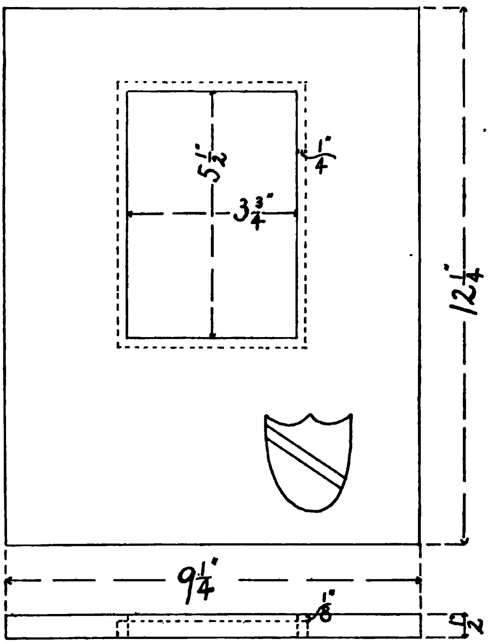


Fig. 4. PHOTOGRAPH-FRAME.

largely upon the teachers' suggestion as to what they shall do, the work is carried on in groups — each group being engaged upon a different piece of work.

In order that the pupil may have a definite plan of work in his mind, and so work independently in the manual training shop, a working drawing is prepared before he begins work on the piece itself.

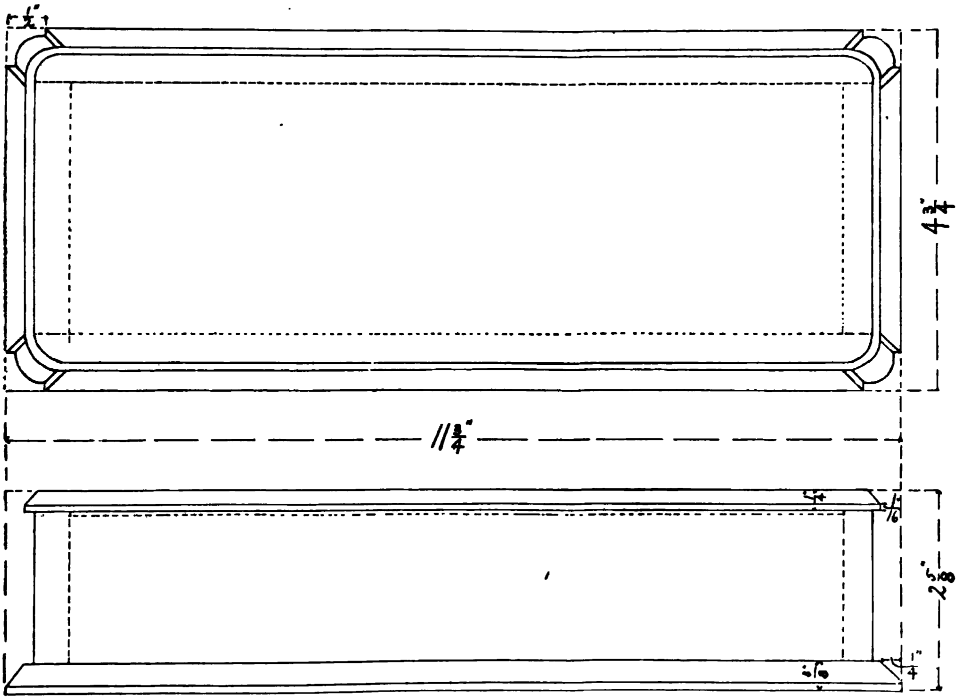


Fig. 5. GLOVE-BOX.

The drawing must give the worker all the information he will need as to dimensions, form, and construction of the object. In some cases notes upon the best method of procedure are also made, after discussion by the group.

In case the object is too large to be drawn full size on the standard drawing paper of the school, the drawing is made to a reduced scale, each pupil making his own calculations and submitting them to the teacher before laying off the lines on the drawing. All of the drawing will be done in the regular grade room and the operations of reducing to scale and the other calculations involved will form the basis for number lessons.

In the grades above the third, drawing boards, T squares and triangles will be used, and in the upper grades the best drawings will be inked and preserved as a help for future work.

Physical Training

Carl J. Kroh Caroline Crawford

Individual Gymnastics

SIGNIFICANCE OF PHYSICAL MEASUREMENTS AND EXAMINATIONS

The physical measurements have a significance, both in regard to the symmetry and proportion of the individual, and also in regard to what is indicated by the size and development of special parts of the body. Fitness for any given work, possibility of development, also mental and nervous conditions, are marked by the peculiar development of the physique. In the following outline only some of the most prominent characteristics are noted. In a later number fuller observations will be given.

Weight: Weight and height must go together to show the condition. Any marked change in weight in a normal body is always serious.

Height: Height is the basis used for comparison in judging the size of any part of the body.

HEIGHTS.

Sitting Height: As a general law, individuals with the largest trunks are the healthiest, because of greater room for the vital organs.

Height of Knee and Length of Thigh: The thigh and the leg should bear a certain proportion to each other. The tables, quoted from the September *Physical Education Review*, giving proportions of the runner and jumper, illustrate how performance is largely based upon build.

Height of Sternum: Height of sternum gives the opportunity to find the length of the trunk without neck and head.

GIRTHS.

The girths of the different parts of the body vary more in their relation than the heights.

Head: Of two people of the same size, the one with the larger head will have the greater amount of nervous energy.

Neck: There is a correlation between the head and the neck. A large head and a small neck are found in feeble children. A large neck, unless flat and flabby, indicates great vital power.

Chest: The chest girth is supposed to indicate vital capacity, but it may not, for a large chest girth may be due to great development of the pectoralis major, or chest muscle.

Ninth Rib: The ninth rib girth is a great factor in chest capacity because of the range of movement over this part of the chest.

Waist: The size of the waist limits the development of the trunk and strength of the back. It matters little how broad the hips are if the waist is small. It is the working base of the body.

Thigh: The thigh indicates the power of the most important muscles of the body. The large development of the leg accompanies civilization.

Knee: The joint indicates the potential strength of the leg. With a large joint there is a large attachment for the muscles.

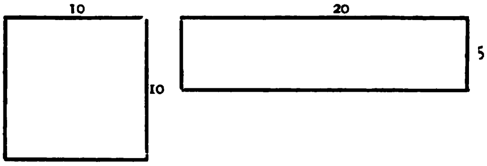
Calf: The calf is as important as the thigh. The primitive people have small calves, because neither their work nor their amusement has induced any exercise which requires the weight of the body to be lifted high on the toes, as does civilized dancing, for example.

Instep: Height of instep is associated with high breeding, because the arch is broken down with hard manual labor and heavy lifting.

Upper-Arm, Elbow, and Forearm: The arm girths are the same as the leg girths in their indication.

DEPTHS.

Depth of Chest: A deep round chest is more serviceable than one which is broad and flat. This is illustrated in the diagram:



While the perimeter of these quadrilaterals is fifty in one instance and forty in the other, the square contents are the same. Capacity of chest increases more with height than with depth.

Depth of Waist: Depth of waist and chest should be about the same. If depth of waist is greater there is generally a surplus of adipose tissue.

BREADTHS.

Head: Head breadth denotes racial characteristics.

Neck: Neck breadth with girth gives vital power.

Shoulders: Breadth of shoulders is usually an indication of strength. A person with comparatively small waist and large shoulders will have but little endurance, while a man with moderate shoulders and broad waist and hips generally has great power to endure.

Waist: The waist should compare with the shoulders.

Hips: The deep pelvis has better attachment for muscles than the broad flaring one, and the size of the hips is most important, with the increasing size of heads in this generation.

Shoulder-Elbow: This length is taken to determine one of the most important levers of the body. The principle holds with rowing as with running. A short upper-arm with a long forearm would give a quick pull and a long stroke.

Elbow-Tip: The power of the forearm is modified by the length of the lever.

Length of Foot: The foot should be correlative with height and weight.

STRENGTH TESTS.

The measurements give potential strength, but the tests show the actual strength. If there is degeneration of muscle tissue it is always shown by the actual strength, while the proportion of the muscles, owing to adipose tissue, may be apparently perfect.

The following tables, quoted from studies made at the Michigan Agricultural College, printed in the *Physical Education Review* of September, 1900, are vivid illustrations of what general measurements are proving to us:

Table I

Showing a comparison of the average track athlete with the proportions of students of the same height at Yale:

	Average.	
	Athlete.	Yale Student.
Height	69.9 in	69.8 in.
Weight	144.6 lb.	153 lb.
Sitting height	36 in.	36.9 in.
Length leg	35.9 "	35.1 "
Length to knee	19.2 "	18.2 "
Arm stretch	73.4 "	72.4 "
Breadth chest	11.2 "	11.5 "
Depth chest	7.9 "	7.7 "
Girth chest, full	38.7 "	37.6 "
Girth waist	30.5 "	30.3 "
Girth thigh, R	21.2 "	21.4 "
Girth calf, R	14 "	14.5 "
Girth instep, L	8.8 "	9.5 "

Table II

Showing a comparison of the average Michigan Agricultural College track athlete with the proportions of the human figure according to the standard of the ancient Greek art:

	Greek. Inches.	M.A.C. Inches.
Height	70	69.9
Arm stretch	70	73.4
Length of leg	35	35.9
Pubis to top of head	35	34
Pubis to knee	17.5	16.7
Knee to ground	17.5	19.2
Width of hips	13.1	13
Width of shoulders	17.5	16.7

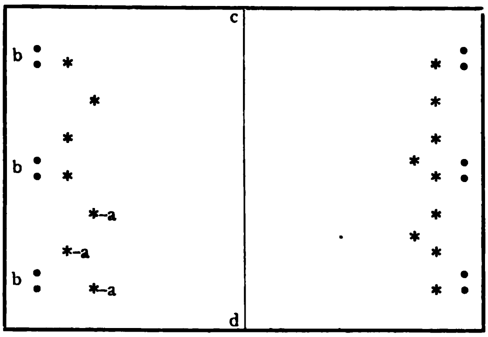
The points noted above in the comparison with Yale student are emphasized more strongly in this table; the short trunk, the short thighs, the long legs and arms are most emphatically marked. Such studies are but suggestions of what is yet to be revealed to us in working with growing children.

References: J. W. Seaver, *Anthropometry;* Nathan Oppenheim, *Development of the Child;* Julius Uffelmann, *Domestic Hygiene of the Child;* Francis Warner, *Study of Children;* Francis Warner, *Growth and Training of the Mental Faculty.* A complete list of the library references will be found in the reading list on anthropometry, heredity, and degeneracy, this month.

General Gymnastics

INDOOR GAMES

Battle Ball: The players (a a) are arranged on either side of the floor in front of three pairs of Indian clubs (b b) set up as illustrated. The chalk-line (c-d) across the middle of the floor divides the field.



The object of the game is to throw the ball past the opposing line of players. The player may stand on any part of the field to throw, but cannot cross the middle line. The ball must be thrown low. The points are: Ball between any pair of clubs scores ten; club knocked down scores five; ball through the line between pairs of clubs scores two. Fouls: If a player crosses the middle line it scores one for the opposite side; if a ball is thrown over an opponent's head the opposing side scores one. The time limit for the game is ten or fifteen minutes. The side winning the greatest number of points in any given time, decided upon before starting to play, is the winner.

Curtain Ball: The floor is divided as for battle ball, with a curtain eight feet high drawn across the middle line (c-d). The players, any number, are scattered about on the floor. The ball is thrown over the curtain from any position and in any manner. If the ball is allowed to strike the floor it scores one point for the side throwing. The side winning the greatest number of points for any given time has the game.

Basket Ball: See Spalding's *Official Basket Ball Guide;* also *Basket Ball for Women,* A. G. Spalding, Chicago. The price of each pamphlet is 10 cents.

Dodge Ball, Pass Ball: See *One Hundred Gymnastic Games,* Geo. H. Ellis, 141 Franklin Street, Boston. $1.00.

A reading list of games will be published later in the year.

Character of the Supplementary Reading in the Primary Grades

Flora J. Cooke

The subject given above was chosen because two-thirds of the questions directed to the Primary Department during the past month have referred to supplementary reading or to the preparation of reading lessons in leaflet form.

The other questions have pertained to seat-work problems, and the answers to these will appear in the February number of the COURSE OF STUDY. The most common questions concerning the reading are: as to whether any regular readers are used in the Chicago Institute, as to the amount of time given to reading in the primary grades, and as to the best supplementary reading.

Theoretically all these questions should be treated as one, but practically it seems better to show how each in turn is met in the school-room.

Concerning the first question we need only say that the place of the so-called "regular reader" in the primary grades is taken by the blackboard and printed reading lessons which bear directly upon all the work the children are doing. At the end of the year these leaflets are classified and bound by the children into book form, and in a sense such lessons summarize the class experiences of the year.

What determines the form and content of these reading lessons was discussed in the article upon *Reading* in the October number of the COURSE OF STUDY, and each reading lesson which is printed will be accompanied by a note explaining its purpose.

We can give only a very general answer to the second question, as the amount of time given to reading depends upon the individual need of each child and the value that reading can be to him at a particular time.

Whatever the time given to this work, the teacher's first duty is to bring about the right attitude toward reading — to make reading from the first a delightful exercise. That this may be possible, not only must the children have continual opportunity to exercise their self-activities in this direction, but the images aroused by reading must always seem to them to be worth their effort.

It is most essential that reading and writing should be constant mediums of communication. For instance, the teacher writes easily upon the blackboard, answering questions, giving parts of stories and directions for work. Indeed, reading and writing are incidentally part of all the work all day long, and are always used by the teacher as direct means of image growth. The child soon desires to read for the same reason that he desires to talk —to tell something or to find out something. Even when the children have reached this stage the question of the time to be given to reading is still not limited to fixed periods upon the program.

The children who learn to read rapidly must now read much silently, and tell the class what they have found out, and the time thus gained must be given to the slower children. This plan is followed because the ordinary set reading lesson is a bore to every one; one half of the children and the teacher soon know a story by heart, and to the other half of the class the forced reading is either a torture or a dissipation of the power of attention.

The following device partially answers the third question given above. It has proved helpful to teachers having many pupils, no printing-press, and a limited supply of appropriate reading material. Two of as many second-hand readers and primary books as possible are secured; the teacher selects all the suitable reading lessons from these and pastes them upon cardboard. She classifies these into sets upon animals, plants, or as fables, myths, and facts. Each child is given a different leaflet, and by this means an audience is obtained, which is the first essential of good oral reading. Such stories should be very short at first, and the children allowed to give what they have read in a picture on the blackboard or in their own words.

This same plan is pursued where we have access to many sets of supplementary reading books. Those are selected which bear upon anything which the children are observing or enjoying, and each child goes to the book with a purpose. From this standpoint there are few books which are absolutely worthless, and as few are wholly good, a list of the books which have been found most helpful in this direction is now being prepared for publication in the Course of Study.

Next month we shall print one or two typical reading lessons for each month up to date. These will be numbered, and can be ordered in sets from the Chicago Institute book-room. This month is filled with the preparation for Christmas, and the reading lessons given in this number are directly correlated with the Christmas celebration.

The children tell whether they think all the children in the world have the same kind of Christmas, and their own happiness expands in their sympathetic interest in what the children of other lands are doing for Christmas. Much cannot be expected from these reading lessons in beauty and literary value. Their scope of usefulness is limited, but they must be good in influence.

In order to give our children as vivid an impression as possible of the life and customs of other children at Christmas, we necessarily used with the reading lessons pictures of the landscape and people, appropriate blackboard illustrations, and dramatic representation.

The reading lesson is placed in the child's hands only when his interest has been thoroughly aroused and he intensely desires to know what Norwegian, Italian, or French children do on Christmas eve.

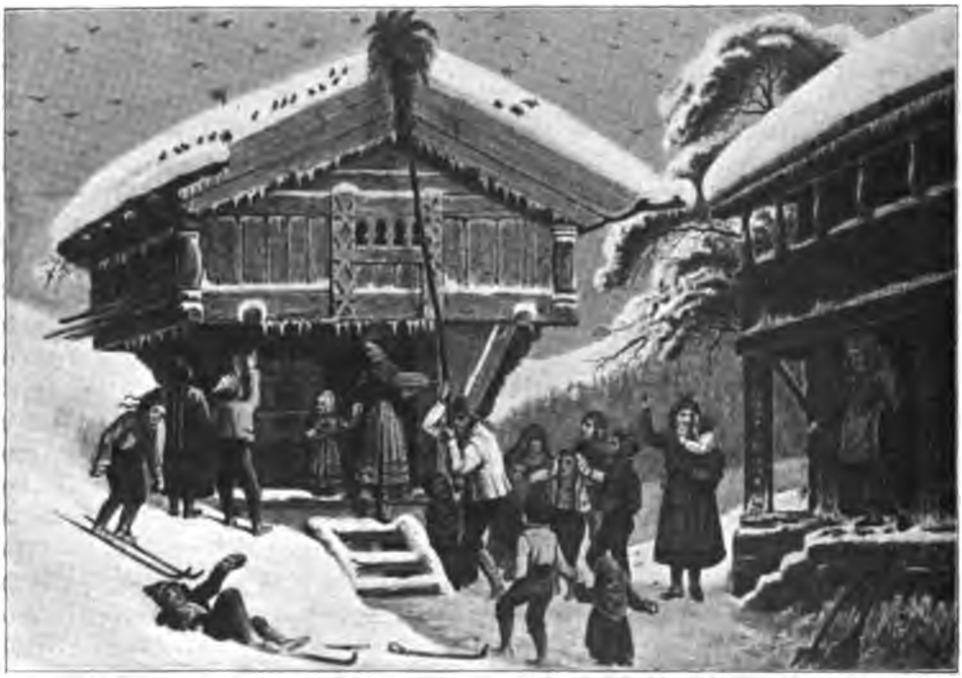
Note: Leaflets of the following reading lessons, printed in large type, may be obtained from the Chicago Institute Book Room. Price, one-page leaflets, 9c a dozen, 1c each; two-page leaflets, 18c a dozen, 2c each.

Second Grade Reading Lesson

Literature Series, No. 1.

One Story the Picture Tells

There is good fun in Norway at Christmas time. Even the birds have a Christ-



CHRISTMAS IN NORWAY

mas party. Björn and his father are putting up a fine sheaf of grain for them.

See Björn and Eivind with their snow shoes! Björn says: "Come and try our snow shoes. It's fine fun; they are almost as good as wings!" Eivind says: "See, we do not mind a fall. We are used to the ice and snow, and we love it."

ANOTHER STORY THE PICTURE TELLS

It is very, very cold, but no one seems to mind it. To-morrow will be Christmas and every one is happy. Baby is watching the birds and crowing with delight.

I wish she would look this way. She is very pretty. She has blue eyes, rosy cheeks, and yellow hair like her brothers and sisters.

Old Granny is on the porch. She is strewing sweet pine twigs about.

She always does this at Christmas time.

That is mother with the cream for the Yule porridge.

That is little Gudrun with the large Christmas cake.

I just wish you could see the Christmas cakes in Norway. They are so pretty, and oh, how good they are!

A STORY THE PICTURE DOES NOT TELL ABOUT CHRISTMAS EVE

In the barn is a large dish of porridge for Robin Goodfellow.

He will come and eat it to-night.

The boys believe he always comes at midnight on Christmas Eve. They would not disappoint him for anything.

There is fine Yule hay for the cows, horses, and goats.

On Christmas Eve each dog, cat, and hen must have a feast.

Shall we tell the dogs, cats, and birds in Chicago about the Norwegian Christmas?

ANOTHER STORY THE PICTURE DOES NOT TELL

In the house all is clean from cellar to garret.

Every one has a new dress or coat.

The walls are painted with bright new pictures.

The ale is brewed, the cakes are baked.

Best of all, the Christmas tree is ready.

Björn and Eivind helped father fetch it from the pine woods. It was the finest small tree in the forest.

No picture could tell as good stories as Granny. She knows all about fairies and gnomes and goblins and giants and such things. She will surely tell stories to-night.

There will be a great fire on the hearth.

At five o'clock the big door will open.

The children will cry, "The tree! the beautiful tree!"

Every one has made a gift. There are boxes, flags, baskets, and sleds. These are under the tree; but on the tree are gilded nuts and apples, candles, gold stars, and — you may guess what.

But Christmas is only beginning in Norway; the table will be spread for thirteen days.

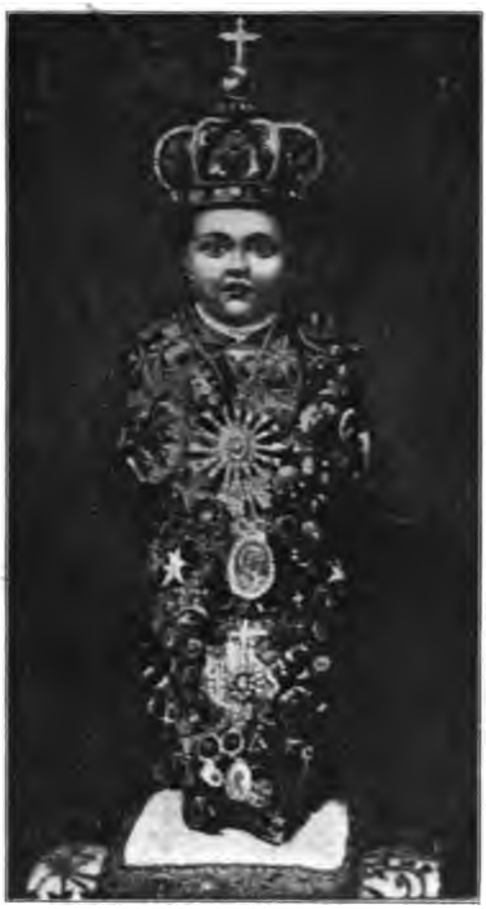
All the people will visit and rest and play games.

In Norway they surely have a Merry Christmas.

STORIES OTHER PICTURES MIGHT TELL

We must look for more pictures of Norway. Some will tell of the wonderful mountains, others will tell of the beautiful blue sea and the ships. Some might show the moonlight and the stars. We should think it was night; but it might be *noon* in Norway. If Björn told you a story of the sun shining at midnight, you would say, "That is one of Granny's fairy tales!" He would think our sun acted quite as strangely.

Let us write him all about our Christmas holidays, and ask him to tell us about his.



PICTURE OF BAMBINO.

Second Grade Reading Lesson

LITERATURE SERIES, NO. 2

Christmas in Italy

Christmas in Italy is a holy day.

Every one goes to church.

The churches are beautiful with lights, pictures, and statues.

Christmas carols and hymns are sung by choirs of white-robed boys.

There is no Santa Claus and no Christmas tree in Italy.

But there are many other beautiful things to see.

People like to be in Rome on Christmas Eve.

Every one wants to see the Holy Bambino.

It is a little statue of the Christ-child.

A poor priest brought it to Rome from Palestine and gave it to the church.

It is as large as a real baby and covered with precious jewels.

You can see its picture, but you cannot see the color of the gems.

Many people bring their sick friends to the Bambino.

They think he can cure them.

Many other people want to see how this wonderful old image looks.

Would you rather be in Italy or in Norway on Christmas Eve?

Second Grade Reading Lesson

LITERATURE SERIES, NO. 3

C. N. S. Envelope, '96

Christmas in Holland

Holland is one of the strangest countries under the sun. The land is much lower than the sea, so that the people must build dikes to keep out the sea. Often on top of the dikes are houses and trees. Many of the streets are water canals and the people go about in boats. Everywhere are windmills. The houses are painted with bright colors. In winter the canals are covered with smooth ice, and the people can skate to market or to church. What good times the boys and girls have !

Christmas comes to Holland, too. The 25th of December is like our Sunday; it is a sacred day. In our country, Santa Claus comes along on that day; but St. Nicholas, the friend of the Holland children, comes on the 5th of December. On St. Nicholas eve the children are allowed to go into the grand parlor. They are dressed in their best. The mothers and girls would seem very odd to you in their caps and brightly colored dresses.

Oh, how excited they all are, even the babies! They play merry games, in which father and mother join. At last they form a ring, each one holding a little basket. They sing a low, sweet song to St. Nicholas. Soon a loud knocking is heard. Father says softly, "Come in!" The door opens; there stands St. Nicholas. He says, "Children, I greet you all!" Then he tells each one to be polite. Some should be more kind and generous. Some should work hard. He seems to know about all the things each one has done since his last visit. He tells them that in the morning they will find out that he has really been there. Then he says, "Farewell!" and throws a great shower of sugar-plums to the children. They fill their little baskets with them.

Soon they all rush to another room, where there is a table covered with a white cloth. Every one, from grandfather to baby, lays a shoe upon it. Then they go out and the door is locked.

Early next morning mother unlocks the door of the room. What a beautiful sight it is! Every shoe is filled to overflowing, and beside each shoe is another heap. There are toys and trinkets of every kind; There are toy cats that move, dogs that bark, and sheep that bleat. There are drums, trumpets, bright skates, dolls, and many books. But what is that? One of the boys finds a switch; he blushes and puts it out of the way. What do you suppose that means? I will leave you to guess.

For the rest of the day each one does as he wishes. Some read, while others play with their new toys.

Kindergarten

Anne Elizabeth Allen

"*Not what we give, but what we share.*"

Immediately after Thanksgiving our thoughts will be turned to Christmas and to finding our places in the great crowd of joy-givers. The blessedness of giving will be realized by even the smallest child when he finds himself equal to the making of the simple little objects planned for him as presents for others. These presents, however small and unpretentious, will be so designed as to come within the ability of all, and will become more complicated only when we feel certain that the skill of the children who are to make them is fully adequate to their completion. Only then will each feel that he can honestly present the gifts as his own work; only then will the Christmas spirit be genuine and satisfying in its influence.

A large tree will be decorated for the parents of the school by the kindergarten and used as one of the decorations in the Assembly Hall.

Another and smaller one will be decorated and made ready for some less fortunate people than ourselves, for which presents of toys, books, fruit, candy, and clothing will be solicited by the children themselves, committees of whom will be appointed in order to insure effective work.

The real significance of Christmas will be shown, as well as the Santa Claus spirit of jollity and fun, and its history in art, story, and music will be made prominent. Pictures celebrating the festival will be selected as decoration for the walls during the holiday season.

Subject—Christmas and its obligations.

All the things that Christmas brings, snow and ice, sleighing, bare trees, empty nests, presents, Santa Claus.

2. Our obligations; our happiness makes that of others; our part in the Christmas happiness.

Stories: Story of St. Christopher; Simple Story of the Birth of Christ; Santa Claus and his Cat; *The Night Before Christmas.*

Songs: *In Another Land and Time,* Smith's Songs, Part I; *The Story of the Christ,* Hill's Songs; *Christmas Carol,* Gaynor Songs; *A Letter to Santa Claus,* Gaynor Songs.

Rhythm: Bouncing of balls. A more marked precision in marching and simple skipping.

Games: Santa Claus and his reindeer. Snowballing.

Materials: Large blocks, clay, paints, cardboard, and zephyr. Chamois skin, colored papers, rafia or vegetable fiber.

Large blocks: Building sleighs, stables, etc. Clay modeling: Sleighs, reindeer, toys. Cardboard, zephyrs, chamois skin, colored papers, and rafia: Making Christmas presents.

St. Christopher

A long time ago in a far-off country there lived a very strong man—so strong that people called him a giant—so strong that as he walked through the woods on his travels he would pull up a small tree to use as a staff.

This giant left his home, where he did not seem to be much needed, and started out to find a great king whom he might serve.

As he traveled he searched. One told him of a king whom they thought great, but he ate too much and was a miserable glutton. The giant said, "No; my king must be a better man than this." Another told him of a king worthy to serve, but he found this king selfish and more fond of pleasure than of his people. Still another he found to be a coward who would hurt people not as strong as himself. And the giant grew discouraged; he had almost given up finding a king worthy of his service and love, when one day in going through the woods he came to a little hut where lived a hermit, a man who lived all alone and tried to serve God by prayer and fasting. To him the giant told his trouble and asked for help.

The hermit said: "I know the king whom you can love and serve and who needs you. He is the king of love and in order to serve him, his people have to cross a wide and deep river. They need a strong man to carry them across, and you could do this."

The giant thought, "What a poor way to serve a great king," and asked, "How shall I know that I am serving him?"

"When you see that dry and withered staff in your hand grow green with buds and leaves, then you will know," said the hermit.

Off went the giant, not glad, but willing to do his best, although it seemed such an easy thing to do compared to the difficult task he wanted to do. By the side of the river he built himself a hut, and there he was always ready for the people who wanted to be carried over. Men, women, and little children came, and day after day and night after night the giant carried them back and forth. He was always glad when the little children needed his help, for he loved them, and joyfully carried them up out of the way of the water and tenderly set them down on the other side.

One night as the wind was howling around his little hut and the rain was beating against it, he thought as he lay in his warm bed he heard a voice calling:

"Come! come and carry me over the water!"

It was such a bitter night that he tried to make himself believe it was just the moan of the wind he heard and not a voice calling; but soon he heard very clearly the voice calling again: "Come! come and carry me over the water!"

This time he got up, put on his stout coat, and taking his staff in his hand went out. On the bank of the river he found a little child, very thinly dressed, asking to be carried across the deep, dark water. Taking him gently in his arms, the giant stepped with him into the river.

At first the child had seemed very light, but as he went farther he became heavier and heavier. The poor giant's back bent beneath the child's weight. Could he reach the other shore with him? He struggled on, feeling each moment that he must give up. On he went, however, until at last, worn out, he reached the shore and sank with his burden on the ground.

He saw a light, and looking up, behold! it came from the head of the child. Trembling with fear and amazement, he grasped his staff for support, and found it had blossomed into leaves and was no longer a dry stick, but fresh and green.

The little child said, "Christopher—for such your name shall be—every man, woman, and child you have carried over this river you have carried for me. I am the king you serve, and long and well have you served me."

Christopher knelt in wonder before the beautiful vision, and knew in his great joy and happiness that at last he had found the king he sought.

ANNE ELIZABETH ALLEN.

St. Christopher

So strong he was, so true and bold,
All people loved him, young and old.
Across the river, dark and wide,
He carried them from side to side—
    Did Christopher, the brave.

His king he loved, his king he served
Through weather cold; nor ever swerved
From work that cost him toil and pain,
From work that showed so little gain—
    This Christopher, the brave.

May little children serve this king
As Christopher did, and to him bring
Just what they have that's best and true
To give unto the king he knew—
    St. Christopher, the brave.

ANNE ELIZABETH ALLEN.

First Grade

Harriet T. B. Atwood

Manual Training and Industrial Art—Christmas Work: The sloyd work and industrial art for December will consist of the making of Christmas gifts. The spirit of giving which should characterize the ideal Christmas can be entered into by the child in no other way quite so well as in the actual making of the gifts for those he loves. The powerful influence which a beautiful motive exerts is illustrated by the energy and patience with which the child strives for accuracy, neatness, and beauty in such work.

As much originality as possible will be encouraged in the making of gifts. The children will first plan the article chosen and draw a pattern of it on the blackboard. They will then criticise their own work, and after more careful measurement, will correct their drawings. The plan will then be made upon paper, and when this working plan is sufficiently accurate each child will be provided with the proper materials for carrying out his idea. The careful measurement and calculation necessary in drawing the plans and estimating the amount of the different materials required will be the number work for the month.

Suggestions for gifts, of which the children may be allowed their choice, are given below, and plans for some of these gifts will be found in the Manual Training outline.

1. Matchsafe. Material, wood and leather, with burned design for decoration.
2. Blotter. Material, blotting paper and colored silks.
3. Keyrack. Material, wood and brass hooks, with burned design for decoration.
4. Stamp case. Material, cardboard, manila paper, colored silks and stamps.
5. Court-plaster case. Material, leather.

History: I. The Christmas Festival. 1. The children's experiences of our own Christmas festivities; what children like best; what they want most; how they would choose to celebrate Christmas.

2. How Christmas is observed in other lands, as Germany, Holland, England, Norway, and Italy.

3. The Christmas story. Good photographs of the most beautiful Madonna pictures will be placed in the school-room, where all may become familiar with them, and a simple version of the Christmas story will be told to the children.

II. Study of Home Activities continued: During December the children will, if possible, complete the decoration of the walls of the miniature home begun in October. (See October and November outlines.) The next step will be the selection of pictures for the walls of the different rooms. A visit will be made to the Art Institute with the view of selecting the pictures, and as far as possible tiny photographs or prints of the pictures chosen by the children will be obtained for the playhouses.

Geography: 1. A study of those landscapes which figure in the stories of Christmas in other lands by means of pictures and lantern-slides.

2. Testing of the stones collected on field trips as to hardness, strength, color, and constituents. The motive for these tests will be to discover what stones would be best to use for the stonework on the miniature houses. Classification and labeling of stones. Experiments to show the action of frost on the different stones.

Nature Study: 1. Study of Crystals. Many of the stones collected by the children contain crystals, about which numerous questions have been asked. Moreover, as the frost begins to appear on the windowpanes other questions will be suggested. During December we shall perform simple experiments in solution and crystallization with salt, alum, and sugar, which will help to answer some of the questions. In preparing for the Christmas tree the children will make rock candy. (See Miss Cooke's outline.)

2. Study of the December landscape by means of daily pictures as in previous months. The children will also begin their picture calendar, which will consist of the paintings of typical scenes of each month.

3. Observation of trees selected for study. Special study of the pine and other evergreen trees.

Correlated Number: Constant use of ruler in making. Drawing of plans for Christmas gifts and estimating the amount required of the different materials.

Reading: 1. Sentences written upon the blackboard or printed on large paper in large type. 2. Printed and written directions for making Christmas gifts. 3. Selected stories: *The Donkey and the Salt*, Æsop; *The North Wind Doth Blow*, Heart of Oak Series, No. 1. 4. Cook County Normal School reading slips: *Lesson on Stones; Christmas Stories; St. Christopher and the Christ-Child;* December COURSE OF STUDY.

Writing, Spelling, and English: Placing of new words in dictionary each week. Reproduction of the Christmas stories in writing, to be used as reading lessons. Descriptions of experiments in crystallization. Labeling of specimens.

School Economics: See Miss Cooke's outline.

Art: Study of the pictures at the Art Institute with the view of selecting some for the rooms of the playhouse. Making of designs for decoration of gifts. Illustrating Christmas stories by means of painting, modeling, paper cutting, and chalk-modeling. To help make the schoolhouse more beautiful for the Christmas entertainment the children will decorate the wall space of their room with posters illus trating the different Christmas festivals. This will be the motive for the illustration of stories. The best of such illustrations will be reproduced and used to decorate the room.

Dramatic Art: 1. Dramatic representation of the different Christmas festivals. Training in hearing and reproducing sound. Phonic games. 2. Oral reading—poems, to be studied and memorized: The Tour of St. Nicholas; The Visit of St. Nicholas, Moore; Wintertime, Stevenson.

Music: *Christmas Song*, F. Root; *Green Holly Boughs Bring*, Eleanor Smith; *Christmas Carol*, E. Smith; *Father Christmas*, German folk-song; *Old Christmas*, E. Smith; *This is the Way the Snow Comes Down*, Gilchrist; *The North Wind Doth Blow*, Elliot; *Summer or Winter*, E. Smith; *A Sleigh Ride*, E. Smith; *Earth's Dresses*, E. Smith; *Wintertime*, E. Smith; *When the Snow is on the Ground*, Elliot. For reference to books where these songs can be found see Miss Goodrich's outline for December.

Second Grade

Antoinette Hollister

History: During the months of October and November the children discovered that two very important problems in the life of the cave man were the protection of himself and his family from the attacks of wild beasts, and the procuring of the flesh and skin of wild animals for food and clothing.

In the study of shepherd life in December the children see a change in the relations between man and animals. The cow, sheep, and dog are domesticated, and man and the animals become mutually helpful—the former as he provides for the animals food, shelter, and protection from their enemies, and the latter as they supply milk, wool, and food to man.

The children will try to discover how under these changed conditions man procured the necessities of life, and will see that the needs of the animals for whom they cared must have had an effect upon the lives of the shepherds. A change of pasture, which was a necessity for the animals, made the shepherds more or less a nomadic people. Instead of killing the animals and using their skins for clothing, these people now began to take the wool without injuring the animals, and invented the art of weaving. The children will be given wool, and will try to invent a way of making it into a fabric. Later they will study the processes of carding, spinning, and weaving, and will weave on their looms fabrics to be used for their Christmas work.

They will study the food of these people, and will serve a lunch such as the shepherds might have had. They will notice in preparing this lunch that there may be several additions to the menu which they planned when studying the food of the cave man.

The dwellings of the shepherds will be represented in clay, cast in plaster, and colored; and many of their customs will be shown on the tiles which the children are making as Christmas gifts

The child often chooses to make for his Christmas gifts articles too complicated for him to make without suggestions from people whose experience is wider than his own. Through this daily necessity in his own life for help and counsel he may be led to discover the need that there must have been among primitive peoples for a leader and that the leader must naturally have been the oldest member of the family —the father. The patriarchal form of government will be illustrated by stories. The Christmas story will be told, and it is hoped that the work of the entire month will especially emphasize the happiness of living for others.

Literature: A story of shepherd dogs, selected from *Far from the Madding Crowd*, Thomas Hardy. Selection from *Ben Hur*, Lew Wallace. *Story of Arachne*, Baldwin's *Old Greek Stories.*

Geography: See outline for Third Grade.

Nature Study: The weather during the autumn months has been so mild that the necessity of a continuous artificial heat in the houses will probably be felt for the first time early in December. In order that they may better appreciate this necessity of their lives the children will study coal this month. Each child will be asked to describe the heating apparatus in use in his own home. Each will bring to school samples of the kinds of coal used in furnaces, stoves, or grates. The specimens will be classified as to color and hardness, and the children will go to a coal-yard in order to ascertain the price of each variety.

Children will be asked to explain why so many kinds of coal are used, and the following experiment will be performed to help them to discover how each variety is adapted to the purpose for which it is used:

The bowls of three ordinary clay pipes will be almost filled with cannel, anthracite, and bituminous coal, respectively. They will then be sealed with plaster of paris and placed over gas-flames. The gas which comes through the stems will be lighted, and the other products which come through the stems caught in water.

Children will record in writing, or with paints, all that they may observe in this experiment. They will also burn the coal in open pans to find out which kind lights most easily, which burns longest, and which burns with the greatest amount of flame.

Number: The children will compare the prices of the various kinds of coal, and will ascertain exactly how much more expensive one variety is than another.

Their work in weaving and in sloyd will necessitate simple addition, multiplication, and division. For additional work in number, see outline for Third Grade.

Reading: During the library periods of this month the children will read stories of shepherd life and Christmas stories to be told at the lunch-table to other children and to guests.

Whenever possible, directions for work will be printed on large paper with rubber type.

Writing and Spelling: Many of the children of this grade write with a cramped position of the hand and of the body. Exercises will therefore be given to correct these habits and to cultivate freedom of movement.

The pupils will be encouraged to write for the benefit of other classes some of the best stories told at the table, and will keep copies in order that they may be used on similar occasions in the future. The spelling must be correct, and the writing the best that the children can do.

School Economics: See Miss Cooke's outline.

Art: The Second Grade children have been especially interested in coloring their plaster illustrations of the life of cave men. They have asked to make more of these, and will be allowed to illustrate shepherd life in the same way. They wish to use these as Christmas gifts.

Music: *In Another Land and Time*, Smith; *Old Christmas, Christmas Time, Christmas Carol, Father Christmas, Earth's Dresses, Sleighing Song,* all in Modern Music Series, Primer; *Winter Time,* Modern Music Series, Number One; *This Is the Way the Snow Comes Down,* Children's Songs and How to Sing Them, by Wm. L. Tomlins.

Manual Training: The work of this month will be entirely Christmas work. Children will select from the list furnished by the Manual Training department articles which they wish to make. See Manual Training Outline.

Industrial Art: Material will be woven for button-bags and more towels will be hemmed for use in the school-room.

Dramatic Art: See outline for Third Grade.

Third Grade

Gertrude Van Hoesen

If the growing interests of the children are to form the basis of the work, it is generally necessary to modify and often to change the plan altogether. It is my purpose in the Third Grade outlines to show how the plan has been changed or modified each month in order to follow the initiative of the children.

Nature Study: In October in preparing food for winter the children dried some of the fruits, this process being the only one that they had never seen. They discovered that different fruits contained different amounts of water. The question was asked, "What else is in fruit besides water?" In order to answer the question it became necessary to begin a line of work not planned in the November outline. The data which the children get in this work will be printed in the first outline following the time at which they answer their question.

At first each child brought the fruit that he wished to dry. It resolved itself into an experiment with only apples and bananas. Then they tested other fruits. The first experiment was as follows: Three children weighed out 30 grams each of the same apple. Then it was carefully dried, and two of the results agreed: 4.8 grains of solid matter left, or about 1-6 of the apple weighed out. As one gram of water equals one cubic centimeter, by measuring out 25 c. c. of water and reweighing 30 grams of fresh apple it was possible for the children to see the relation of the constituents to each other. Then the question, "What else is in the fruit?" was asked. The November work consisted of answering that question.

1. The fruits were tested for starch—making the test with both fresh and dried fruit. The presence of starch is shown if the substance turns blue when a drop of a weak solution of iodine falls on it.

2. They were tested for carbon. The test for carbon is burning.

3. Ten grains of the dried substance was burned until all of the carbon disappeared and only ash was left. What part of the dried fruit was ash? What part of the fresh fruit is ash?

4. Then the ash was tested for lime and salt. The presence of lime is shown by effervescence when a portion of the ash is dropped into a test tube containing HCl, or H_2SO_4 concentrated.

The test for salt is $AgNO_3$. If salt is present in a solution, a drop of $AgNO_3$ produces a cloudy effect.

The study of the fruits and some vegetables during November consisted of experiments necessary to determine the following points:

1. What part of each fruit is water? What part of each fruit is solid matter?
2. Test for starch.
3. Test for carbon.
4. What part of each fruit is ash?
5. Tests for lime, salt, and possibly potash.

In December the articles of food which are found on our daily menus will be tested for:

1. Starch. 2. Carbon. 3. Albumen and gluten. 4. Sugar. 5. Fat.

1. Test for starch — iodine.
2. Test for carbon — burning.
3. Test for albumen — heat, illustrated with

the white of an egg and the juice of meat. Test for gluten — wash all the starch from wheat flour, gluten remains.

4. Test for fat — grease.

5. Test for sugar — taste.

This examination of foods will extend through January, as it is one of the subjects in which the children show keen interest, each child performing each experiment individually.

The observation and record of the landscape will be continued. The children will be encouraged to visit the animals of Lincoln Park, noting especially the covering of the different animals and their habits of eating. The books about animals in the library will be placed where the children may use them freely.

Geography: In the study of roads in October, an asphalt pavement was laid in front of the school-building, and was therefore the first road considered. The process was carefully observed, and recorded from beginning to end. The question, "What kind of stone are the men using?" took us into an investigation of stones. The great interest which these experiments aroused, augmented by the number of new buildings in process of erection in the neighborhood, made it seem wiser to follow the pupil's interests in that direction, and continue through November the study of roads. The November work was carried on as follows:

1. A small sample of stone used in laying the road was dropped into a test tube containing concentrated acid. Effervescence immediately followed, and soon the bit of stone was entirely dissolved.

2. Bits of marble were dropped into a second tube containing acid, and a more violent effervescence and a more speedy dissolution followed.

3. Small shells were placed in a third tube with acid, and almost instantly disappeared.

The conclusion was that the three contained the same substance, to which the name lime was given.

Samples of all the stones being used in the neighborhood and stones collected at the Sand Dunes were brought in and tested.

The first classification was: 1. Stones that contain lime. 2. Stones that do not. Experiments were made to find out what the stones were that did not contain lime. Sandstone was discovered by putting several small pieces in a jar of water and shaking it vigorously. A piece was also examined under the microscope. The stories of the formation of sandstone and limestone were told.

The use of different stones.

Test for strength, hardness, and durability. In testing for the last named quality, pieces of various stones were soaked in water for several days. How would the tendency of a stone to absorb water affect the desirability of using it?

Effect of taking a high polish?

Another classification was soon made:

1. Stones which apparently consist of one constituent.

2. Those which contain more than one.

Effect of heat on these two classes. How does the fact that certain stones are more desirable than others affect them in the buildings around us?

The children were taken to a place where the underlying rock in the region crops out. Test: Compare the expense of obtaining the best stone and the limestone which is so plentiful.

During the month, study of road-making was continued.

The study of the water supply as planned for November will be taken up in December.

History: As the Third Grade children have never had the study of primitive peoples, it was thought best to let them do that work with the Second Grade. See Miss Hollister's outline.

Literature: As the December thought is distinctly the Christmas spirit, the literature is directly connected with the History. See Miss Hollister's outline.

The story of Ulysses is continued to his arrival in the land of the Phæacians. Stories of the celebration of Christmas in other lands.

Number: Computation of the cost of the Christmas presents. Numbers necessary in making the plans or working drawings for each Christmas present. Comparison of the meteorological records for November with October.

Writing and Spelling: Complete records of all experiments made in Nature Study and Geography. Descriptions of the landscape under different meteorological conditions.

Original stories and dramatization of stories told.

Dramatic Art: Dramatic presentation of the celebration of Christmas in other lands. Training in hearing and reproducing English vowel sounds continued. Poem to be studied and memorized: *The Night before Christmas.*

Music: The same as the Second Grade.

School Economics: Special point: Care of room.

Cooking: See Miss Cooke's outline.

Art: Illustrations of the stories in History and Literature with clay, painting, blackboard, and charcoal illustrations. Painting of the landscape. Modeling in clay of animals specially studied in park.

Industrial Art: The Christmas presents include two articles requiring both plain and fancy sewing: a laundry bag for handkerchiefs and a button bag.

Manual Training: The manual training for December consists entirely of work on Christmas presents. The children are to be given a choice of two articles, (1) a blotter pad and (2) a matchsafe. For plans of the above articles see the Manual Training outline.

French: The French will be directly correlated with the Nature Study and the making of Christmas presents.

Physical Training: Continuation of November work.

Fourth Grade

Clara Isabel Mitchell

Christmas, its celebration and present-making, will doubtless form the chief interest of the children this month. The celebration will be an elaborated morning exercise, in which all grades of the school participate, prepared for each of the many for the entertainment of all. Parents will be specially invited to be present and receive the gifts prepared for them. The entire program is planned to grow out of the regular work of the school: the literary part will be prepared as lessons in literature and dramatic art; the songs will be learned in the hours for music; the gifts will be made in the time devoted to manual training and art, special afternoon hours being arranged for additional time.

Literature, Oral Reading, and Dramatic Art: The children will read and reread the Bible story of the Star of Bethlehem, the Shepherds, the Wise Men and the Child in the Manger. The portion of Ben Hur which describes the journey of the three kings will be told or read by teacher and children together. Prints and photographs of the great pictures illustrating the Nativity will be shown, and hung in the school-room. The special contribution made by the Fourth Grade class to the general entertainment will be adaptations and arrangements of the Christmas story where it fits into the thought of the program of the whole. Christmas stories and poems will be read, told, dramatized, and read orally, for the reinforcement they may give to beautiful Christmas sentiment and action. The poems selected are: *A Song of St. Francis,* by Henry Neville Vaughan; *Santa Claus,* anonymous, and *The Little Christmas Tree,* Susan Coolidge.

As continuation of the sociological excursions and observations of the previous month, the children will read and hear stories of the Christmas customs of the foreign people of the city, either here or at home: Italian, German, Scandinavian, Dutch, English, and Russian.

Music: After the children have become deeply interested in the idea of Christmas they will be encouraged to make a Christmas song for their parents or friends, or imaginary people, as an expression of their feeling for the season. If different children venture to make suggestion of ideas for the song, these ideas will be discussed and the most fitting put into simple verse as text. Volunteers will be encouraged in setting this original text to music. When the music and verse shall have been discussed and decided upon, the entire class will memorize it and learn to write it.

The rote songs chosen as beautiful and best suited to the season are: *We Three Kings of Orient; Christmas Carol,* by Eleanor Smith Modern Music Series; *Green Holly Boughs,* E. Smith; *First Nowel,* Old English carol, December COURSE OF STUDY; *Christmas Bells,* Niels Gade (text by Hans Christian Andersen) December COURSE OF STUDY; *Christmas Bells,* (text by Longfellow), Modern Music Series Second Book, Eleanor Smith; *Ye Shepherds, Arise,* Reinecke, Fifty Children's Songs; *St. Christopher,* Mrs. Crosby Adams, December COURSE OF STUDY; *God Rest You, Merry Gentlemen,* December COURSE OF STUDY; *Old Christmas,* Modern Music Series, Second Book, Eleanor Smith; *Winter Song,* Modern Music Series, First Book, Eleanor Smith.

Manual Training and Industrial Arts: Besides making the metal trays, simple books, and baskets indicated in the November Outline, the children will make wooden shoe-boxes of poplar wood, staining them with aniline colors and outlining simple original designs with pyrography. They will also make button-bags of silk, ornamented with beads; stick-pin holders woven of silk in simple design; sofa-pillow covers and small table covers of colored linens ornamented with applique.

History: Continuing the study of Chicago begun in October, the history will be studied as offering possible explanations of the questions asked during the past two months as to causes of the great present population. The geography excursions and discussions of the previous months having given a setting, the children will be prepared to image the early conditions of Chicago.

The history study will begin by the reading of a brief description of Quebec, Lake Champlain, the St. Lawrence, Lake Huron, and the settlements of these regions.

The following points will be taken as of importance in the settlement of Chicago: Discovery of the Mississippi; discovery of the Chicago portage; journey of Joliet and Marquette; life, work, and death of Marquette; career of La Salle; life and characteristics of the Iroquois, Sioux, and Illinois Indians. These early events will be pictured by the children in writing, drawing, and painting. Special books for the keeping of this story will be made, illustrated, and written by the children as the lessons are given.

Geography: The Chicago River will be visited once more; its use, past and present, will be discussed; and its appearance, cause and source of mud, and deposition of sediment.

From this study of the Chicago River the children will think about the subject of rivers in general, and they will be taught the reason for different kinds of river valleys, cañons, falls, wide valleys, and the flood plain. They will make in the laboratory illustrations of the different kinds of river valleys, and will also make river basins, showing relation of tributaries to major stream, and relation of a river, in a general way, to the industrial life of a region.

Number: In connection with the buying of materials for Christmas presents the children will be taught correct and simple methods of keeping accounts. The work of previous months will have given intelligent understanding of the use of percentage and decimal forms, and these will be applied to United States money.

Nature Study: The methods employed by different forms of animal life for protection against the cold of winter will be the subject for science lessons. The domestic animals and those of the zoölogical gardens will be observed and discussed.

The use of wood, coal, and gas as fuel will be studied in the burning of a candle as an illustration of combustion.

Cooking and Domestic Science: Owing to delay in securing suitable room and equipment for teaching this subject, the October work was not taught as outlined, but was given in November instead. Following that plan, the October work in cooking will be the study of sugar in the making of candy: burned sugar, caramel, syrup, and recrystallized sugar. Connecting with the science lessons already outlined, the large percentage of carbon in sugar will be discovered as a product of combustion. As stated in the outlines of previous months, the foods successfully cooked will be served at the daily luncheon hour, which is an occasion for mutual entertainment, attention, and courtesy, as well as refreshment.

References

EARLY HISTORY OF CHICAGO.

Andreas, *History of Chicago*, Vol. I, II, and III; Blanchard, *The Northwest and Chicago*, Vols. I and II; Kinzie, *Wau-Bun*, edition of 1873; Moses, *Illinois, Historical and Statistical*, Vols. I and II; *The Fergus Papers.*

RIVERS.

Geikie, *Physical Geography;* Réclus, *The Earth;* Herrick, *The Earth in Past Ages;* Brun, *Geology;* Le Conte, *Compend of Geology;* Encyclopedia Britannica; Macturk, *Physical Geography;* Huxley, *Physiography;* Russel, *Rivers of North America;* Chisholm and Lute, Longman's *School Geography;* Slater, *First Book in Geology;* Tarr, *Physical Geography;* Abbott, *Water and Land.*

Fifth Grade

Willard Streeter Bass

History

The subject for the month will be the settlement and early history of Virginia. The study of the social and industrial life of the colony will be a very prominent feature of the work. The influences which determined the peculiarities of Virginian life sought in (1) the character of the colonists and their motives in coming to America and (2) in the geographic character of the colony. The work will begin with a comparison of life on a Virginia plantation with that on the New England farm studied in November, and comparisons with the conditions previously studied in New England will be made at every step in the work, in order that the effect of geographic and climatic influences upon social, industrial, and civil institutions may be more clearly seen. The topics to be treated, with some hints of the methods to be employed are given below.

THE VIRGINIA PLANTATION. The teacher will show pictures of Virginia plantations of colonial times. The pupils will observe the character of the land, the size of the fields, the house, the slave quarters, etc. The chief business of the plantation will then be discussed, and the methods of tobacco culture and their influence upon the life of the planter determined. The plantation will be compared with the New England farm studied in the November history, and with the Illinois farm visited in October. The life of the planter's children will be studied as a means of making vivid to the pupil's mind the leisurely outdoor life, with its abundance of sports, and its scarcity of books and studies, its lack of towns and schools.

GEOGRAPHICAL CONDITIONS WHICH MADE THIS LIFE POSSIBLE. The children will see from pictures that the soil is fertile and the climate favorable for tobacco culture. From sand or chalk modeled maps they will see the abundance of rivers, and how it would be possible for each planter to have his own wharf and sell his tobacco and buy his manufactured articles from the master of some ship at his own door.

CHARACTER OF THE COLONISTS AND THEIR MOTIVES IN COMING TO AMERICA. The lack in Virginia of the intense religious feeling which characterized the New England Puritans will be at once apparent to the pupils, and they will be led to seek its cause in the more commercial motives which were responsible for the colonization of Virginia. Among these will be noticed the desire of England to rival Spain in obtaining wealth from the New World, and the incentives as well as possibilities of colonization growing from the destruction of Spain's sea power.

STORY OF JOHN SMITH AND THE FOUNDING OF VIRGINIA. Tell or read the story of Smith's early life as that of a great adventurer in an age of adventurers. Let children give Smith's probable motives in coming to Virginia. Describe the first years at Jamestown, what Smith did for the colony, his explorations, and his adventures with the Indians. Make the descriptions so vivid that the pupils can draw a picture of Jamestown and of the more dramatic of Smith's adventures.

References: Fiske, *Old Virginia and Her Neighbors*, Vol. II, pp. 174-269; Doyle, *English Colonies in America*, Vol. I, p. 185; Lodge, *English Colonies in America*, pp. 1-92; John Smith, *The True Relation* (American History Leaflets, No. 27); Earle, *Home Life in Colonial Days*. For children: Charles Carleton Coffin, *Old Times in the Colonies;* Guerber, *Story of the Thirteen Colonies;* Carpenter's Geographical Readers, *North America*, p. 104.

Geography

The work of the month will be the beginning of the study of North America as a continent. The particular object of the month's work will be to have the pupil form a clear image of North America as a huge land mass composed of widely varying landscapes and supporting many forms of life and activity. Maps will be used this month as a means of helping the pupil to form a clear perception of the landscape of a region and its relation to other regions.

The class will first consider the landscape about Chicago and discuss it in respect to (1) surface, i.e., level or undulating, (2) soil, (3) vegetation, (4) occupations of inhabitants, (5) agricultural products.

The landscape in other sections of the continent will be studied in the same particulars as that about Chicago. The means of study will be twofold. (1) Those of the pupils who have traveled will describe the regions they have visited to the rest of the class, and draw pictures on the board showing the landscape, occupations of the people, etc. (2) Pictures of characteristic landscapes and industries will be exhibited and descriptions of them read. The localities so studied will be New England, whose history was studied in October and November; Virginia, whose history is being studied in December; the cotton belt, the great plains, the Rocky Mountains, and the Pacific slope.

The class will locate each of the regions studied by pointing to the direction in which it lies from Chicago, and telling the length of time required to reach it by railroad. The Atlantic and Pacific oceans and the Gulf of Mexico will be located in the same manner, and the distance to the Arctic Ocean estimated by the time which would be required to reach it, if the conditions of travel to it were the same as to the other seacoasts.

The teacher will then clarify the crude picture of the continent thus formed, by modeling it in sand before the class. He will begin by locating Chicago, and, seeking directions from the class at every point, will locate and represent each region studied. The result of his work should further show the general triangular shape of the continent, the largest indentations of the coastline, the division of the land into two great slopes, and the positions of the largest river basins. The class will describe the shape of the continent and the position of the two great slopes by gesture and then model it in sand. As the pupils feel the need of more detailed knowledge for the sake of greater accuracy in their maps, the teacher will model a map in chalk.

The class will then study, by means of pictures, descriptions, and United States crop bulletins, the probable climatic conditions and occupations of the people in various parts of the continent as they exist in December. The types taken for study will be the Eskimo and the Klondike miner in the extreme north, the lumberman in Canada and northern United States, the cotton grower in southern United States, the cowboy on the plains, the fruit grower in California, and the cacao planter in Mexico. Each pupil will take one of these men and find out all he can of his daily life and his surroundings. He will then report what he learns to the rest of the class in writing, by a picture, and if possible by actually acting out some portion of the life studied.

References for Pupils: Carpenter, *Geographical Readers, North America*, pp. 109–118, 184–189, 264–274, 298–306; King, *Picturesque Geographical Readers, Fifth Book*, pp. 1–13, 78–106, 206–216; Ibid, *Second Book*, pp. 1–13, 165–169, 273–276; Wyckoff, *The Workers*, Vol. I.; Tarr and McMurry, *North America;* United States Crop Bulletins; Longman, *Geography*,

Nature Study

METEOROLOGY: The weather record, by means of the color chart and graphical thermometer record, will be continued. The principle of the barometer will be explained. Each child will learn to read the instrument and will keep a graphical record of its rise and fall during the month. The conditions of the weather following a rise or fall of the barometer will be carefully noted and an estimate formed of the usefulness of the instrument in directly predicting the weather.

ASTRONOMY: The inclination of the sun will be observed with the skiameter at nearly the time of the winter solstice. The area of level ground covered by a given cross-section of sunshine will be determined and compared to the area of level ground covered by an equal cross-section November 22. In connection with this a comparison of the average temperature of November and December will be made.

PHYSICS: Simple experiments upon air pressure will be performed by the pupils, which will lead up to an understanding of the principle of the barometer. Care in observing and recording experiments will be required of the pupils, and the necessity of drawing one's own inferences from experiments insisted upon.

Simple experiments will also be performed to show the conveyance of heat by conduction and convection, and to show the expansion of solid, liquid, and gaseous bodies when heated. Practical applications of the principles learned in the above experiments will be seen in a study of the heating and ventilating apparatus of the building.

References: Jackman, *Nature Study and Related Subjects*, pp. 64–67; Jackman, *Nature Study in the Grammar Grades*, pp. 107–113, 136–144, 153, 154; Hall and Bergen, *Text-Book of Physics*, pp. 28–40, 223–227, 342–344, 346, 349, 350; Carhart and Chute, *Elements of Physics*, 83–102, 104–108, 128–137, 140–142.

Number Work: Problems of the same nature as those described in last month's outline will arise also from this month's weather record and skiameter observations. These problems will be treated in the same manner and will give the pupils practice in the use of fractions and in percentage as a means of expressing a ratio.

In connection with the study of the heating apparatus of the building, the amount of coal burned in a day, a week, and a month will be ascertained, and from this, and the price of coal, the cost of heating the building will be determined.

Written Work: History. The class will write an original story of the life of a Virginia boy, modeled after the story of Ezekiel Fuller in *Ten Boys*, and intended to supply in some measure the lack of such a story in that book.

Geography. Each pupil will write a story of a December day in the life of an inhabitant of some portion of North America.

Nature Study. Written records of all experiments in science will be kept, and care will be taken to have these clearly expressed and correctly written.

Art: Painting of December landscape and of scene from Virginian life.

Drawing: Apparatus used in experiments in physics. Diagram showing area of level ground covered by a beam of sunshine of given cross-section at noon on December 22.

Sand Modeling: Map of North America.

Music: *Christmas Bells*, p. 92; *Old Christmas*, p. 100, in Second Book Modern Music Series; *We Three Kings of Orient Are; Christmas Carol*, p. 128 First Book Modern Music Series; *Zu Bethlehem Geboren*, December COURSE OF STUDY; *In the Tempest*, p. 182 Third Book Modern Music Series; *Father Christmas*, p. 57 Primer, Modern Music Series.

Sixth Grade

Edith Burnham Foster

History

I. The sea route to India. 1. Vasco da Gama (1498). (a) Found favor with the Hindu Rajah of Calicut on Malabar coast, and took back a letter from him to the King of Portugal. (Text of letter to be read. Quoted in *Hunter*, p. 418.) (b) Subsequent voyages and settlements of da Gama.

II. State of India at that time. (a.) In hands of Hindus. (b.) Who were the Hindus?

III. History of conquerors of India.

1. Aryans conquered aborigines. (a) Traces of aborigines now in scattered tribes. (b) Our knowledge of early history unreliable. Ramayana; Mahabaratha.

2. Hindus: (a) Brahminism: Caste. (b) Buddhism.

3. Mahommedan invasions.

4. The Moguls.

IV. The Moguls.

1. Babei.

2. Akbar. (a) Founding of empire. Tolerance in religion. Conciliation of Hindus. (b) Shah Jahan. Golden age of Mogul rule. Buildings. (c) Jahangir. Roe's embassy. (Quote Jahangir's letters to King James of England. In *Embassy of Sir T. Roe.*) European knowledge of India corrected and enlarged.

V. What the Moguls did for India.

1. In government. Made a firm empire. (a) By reforming the taxes. (b) By conciliating the Hindus.

2. In architecture. (a) Delhi. (b) Agra. (c) Fort at Agra, as typical of Akbar. (d) Pearl mosque and Taj Mahal as typical of Shah Jahan.

VI. The Moguls as tomb-builders. Their idea of a tomb and of death as compared with that of the Egyptians, as illustrated by the Taj Mahal and the Pyramid of Cheops.

1. Taj Mahal.

[Some time will here be spent in studying Mogul architecture, and comparing its forms and decorations with those of other architectures with which the children are familiar. The children will be helped to see how the style was the outgrowth of racial ideas and tastes, adapted to local conditions. Many pictures, of course, will be used, and the children will draw ground plans of some of the famous buildings.]

VII. India after the Moguls. This period, embracing the rise of the Mahratta power, the origin and development of the East India Company, and finally British rule in India, although of vast importance, will be somewhat rapidly passed over, the Moguls and their art being the principal subject for the month. The home life of different classes of the Indian peoples to-day will, however, be dwelt on at considerable length. Their religion, their education, their arts and manufactures will be gone into, and the ways in which these influences affect the daily living of the people will be shown.

References: Marshman, *History of India;* Dow, *History of Hindustan;* Fergusson, *History of Indian and Eastern Architecture;* Braddon, *Life in India;* Foster, *The Embassy of Sir T. Roe to India* (publication of the Hakluyt Society); Hunter, *The Indian Empire.*

Nature Study

The subjects for the month are HEAT and FUEL.

The children will first organize their present knowledge by answering certain questions, such as: With what modes of heating are you familiar? Describe the apparatus necessary in each case. On what principles does each mode depend? What are the advantages of each mode? Disadvantages?

I. Open Fires.

1. With coal. (a) Hard. (b) Soft.
2. With wood.
3. Grates, movable and fixed.
4. Andirons.
5. Shape of walls of fireplace.
6. Relative size of fireplace and flue.
7. Ash-chutes.
8. Advantages: Beauty; simplicity; good ventilation afforded.
9. Disadvantages: Expense; constant attention necessary; small radiating power.

II. Stoves.

1. Stove structure; fire-box; pipe; dampers; ash-box.
2. Fire building: material; draughts.
3. Principles: (a) Convection. (b) Conduction. (c) Radiation.

III. Furnace.

1. Hot-air. (a) Construction; compare with stove.
2. Hot-water. (a) Construction of apparatus; compare with kitchen boiler. (b) Convection of water. (c) Insulation of pipes. (d) Relative conductivity and radiating power of material.
3. Steam. (a) Construction of apparatus. (b) Latent heat of steam.

IV. Fuels.

1. Coal; where found; composition. (a) Anthracite. (b) Bituminous. (c) Countries and sections of countries where this is the chief fuel. (d) Cost, actual and relative.
2. Wood. (a) Disadvantages. (b) Where most used. (c) Cost.
4. Gas, natural and manufactured.

References: Encyclopedia Britannica: Articles on *Conduction, Convection, Radiation;* Ganot's *Physics;* Jackman's *Nature Study for the Grammar Grades.*

Geography

I. The relation of India to the rest of Eurasia.

1. Peninsular form.
2. Mountains to the north. (a) Their influence on climate. (b) Strong barriers between India and Central Asia.
3. Seas to south, east, and west. (a) Their influence on climate. (b) Europeans first directly approached India by sea.

II. The great natural features.

1. Mountains. (a) Himalayas, highest in the world. Few passes. Drainage from both north and south slopes comes into India. (b) Vindhyas. Barrier between north (Hindostan) and south (the Deccan). (c) Western Ghats. Their unbroken wall to the south makes bold and beautiful coast scenery and determines direction of drainage to the east. Influence on rainfall. (d) Eastern Ghats. Pierced by rivers from the west. Influence on rainfall.
2. The mountains and monsoons as determining climate.

III. The rivers.

1. Indus. (a) Route of commerce. (b) Pathway for invaders.

2. Sutlej.

3. Brahmaputra.

4. Ganges. (a) Its sacred character. (b) Importance to India.

5. The rivers of the Deccan. (a) Narbada. (b) Tapti. (c) Godavari. (d) Kistna. (e) Kaveri.

IV. The plains.

1. Indo-Gangetic plain. (a) Extent. (b) Fertility (two and three harvests a year). (c) Products: Pease, pulses, oil-seeds, poppy-plants, jute, rice, tea. (d) Density of population.

2. High plain of the Deccan. (a) Wonderful black soil. (b) Mineral wealth. (c) Coal.

V. Great Fertility of Indo-Gangetic plain and its sheltered situation as fitting it to be the cradle of a race.

VI. Physical geography and political destiny of two sides of the peninsula as determined by the characteristics of the mountain ranges on either coast.

1. On east country comparatively open and everywhere accessible to the spread of civilization. Here ancient dynasties fixed their capitals.

2. On the other hand, people of the western coast have bountiful rainfall, caused by the monsoon and the Western Ghats, while central and eastern portions are comparatively dry.

VII. Scenery of India. Varied character.

1. Highest mountains in the world.

2. Great plains and deltas.

3. Vast forests impenetrable to man.

References

Same as for history, with exception of Braddon, Forster, and Fergusson. An excellent article, condensed from Hunter, is to be found in the *Encyclopedia Britannica* under the head of *India.*

Number Work: Compare length, breadth, area, and population of India with those of China and of the United States by fractions and percentage. From United States Census Reports estimate density of population in New York, Illinois, Nebraska, Montana, and compare with that of Chinese and of Indian river plains. Compare area and population of all Europe with that of India. Compare revenue of India under Jahangir and under British government to-day, and compare purchasing power of the two sums. Compare cost of living in India with cost in United States and in China. Compare area of Indian and Chinese river plains and annual production of each.

Making: Making of Christmas presents. Making of transparencies.

Modeling: Modeling of tiles in low relief representing Indian costumes and customs.

Painting: Landscape calendar. Sketch of child in Indian costume. Sketches of Indian objects of art. (After visiting the Nickerson collection at Art Institute.)

Drawing: Drawing of ground plan of Taj Mahal. Sketch of elevation of Taj Mahal. Making of Indian geometrical designs.

Music: *Christmas Bells,* Niels Gade, text by Hans Christian Andersen, December COURSE OF STUDY; *Christmas Bells* (text by Longfellow), Modern Music Series, Second Book, Eleanor Smith; *Ye Shepherds, Arise,* Reinecke, 50 Children's Songs; *St. Christopher,* Mrs. Crosby Adams, December COURSE OF STUDY; *Old Christmas,* Modern Music Series, Second Book, Eleanor Smith; *The Christmas Tree,* Edward Grieg (Augener and Co. Edition); *Winter Song,* Modern Music Series, First Book, Eleanor Smith.

Dramatic Reading: *The Demon of the Matted Hair* (adapted from Hindu myth). Other adaptations from the *Ramagana* and *Mahabaratha. The Pipes of Lucknow.* Reading and dramatization of scenes from *The Jungle Books,* Kipling; *The Last Suttee.* Training in hearing and producing English vowel sounds.

Seventh Grade

Katharine Stilwell

Roman History

METHOD:

Pupils will state the political and economic conditions in Rome at this time. They are to infer these conditions from their study in November. They will then put themselves in Rome, and reason out the best method of improving these conditions. They will read the story of the Gracchi and their mother Cornelia. They will also read the stories of Marius and Sulla, comparing these efforts at reform with the plans they themselves have suggested.

Cicero's life will be taken up first as the typical life of a Roman boy. His childhood and boyhood will be presented to the class through pictures of his dress, home, the furniture of the house, the school, his occupations, etc. His first appearance at the Forum will be illustrated in costume, and his preparation for public life described by the teacher.

His power as an orator will be felt through the study of a selection from one of his orations on the Catilinian conspiracy. His idea of government will be discussed, and the pupils will themselves try to fit it to the existing conditions, and in this way discover for themselves the cause of his failure.

They will, by reading, learn all they can about Cæsar. They will then compare him as a public officer, as a general, as a writer, and as a dictator. In studying his duties as a public officer, they will learn about the public games of the Romans. In following his career as a general, they will trace his campaigns, noting their relation to the geography of the region. Selections will be read from the Gallic war.

The pupils will then discuss the character of the man, and compare the historical Cæsar with Shakespeare's Cæsar.

They will learn the condition of Rome in the time of Augustus by spending a day with the poet Horace. (See *The City of the Seven Hills.*) They will visit the Art Institute, and study pictures of the roads, temples, and statues of this period. The period after Augustus will be briefly described by the teacher.

From their own experiences, from reading, from the picture collection of the school, from stereopticon views of Pompeii, from the pictures and statues seen at the Art Institute, and from objects at the Field Columbian Museum, the pupils will discuss what is in the world to-day of Roman art, language, literature, and law.

I. THE REVOLUTION.

1. Political and Economic Conditions.
2. Agrarian Reforms. The Gracchi. Senate vs. Assembly.
3. Jugurthan war. Marius. Democratic ascendency.
4. The Social war. Its results.
5. Senatorial ascendency. Cost of Sulla's conquest. Object and result of his constitutional legislation. Its overthrow.
6. Political power in the hands of the military authorities. Consulship of Pompey and Crassus. Gabinian and Manilian Laws.
7. Cicero. Cæsar. Catiline's Conspiracy. Coalition of Cæsar, Pompey, and Crassus.
8. The Civil war.
9. The Dictatorship.

II. EXTERNAL AFFAIRS: Pompey in Asia. Cæsar in Gaul. His entrance into Britain.

III. THE EMPIRE.

1. Rome in the Time of Augustus.
2. Rome after the Time of Augustus.
3. The Christians.
4. Rome to-day. What is left of Art, Language, Literature, Law.

Geography: Eurasia. As the pupils of the grade have not studied Eurasia, they have not the geographical basis for the work as planned in Roman and English history. Eurasia, therefore, will be taught in both the Seventh and Eighth Grades.

1. Location. What we have from Eurasia. People we know there. Routes over which they traveled. Time. Distance. Other routes.
2. Size. Latitude and Longitude. Area. Extreme length and width. Coastline. Compare with North America. The pupils will look up data in the reference books.
3. Examine pictures of the various regions of Eurasia.
4. The teacher will give an oral description, molding in sand.
5. Physical Features. Mountains, location, and height. Plains, seas, rivers, plateaus, and peninsulas.

Pupils will use the library for information on the above topics. The teacher will draw the country, beginning with the Pamir, as the pupils describe it. The pupils will model in sand.

6. Great central plateaus. Great depression. Great Siberian plains. European plains. Great Britain and Scandinavia. A less superficial study of the country will now be made according to the above classification. Pupils will study the surface, climate, and vegetation of each district. Pictures will be freely used and typical landscapes painted.

7. Europe and Asia will next be taken up separately. The pupils will study the political divisions of each continent, gaining whatever knowledge is available through reading, through pictures, and through the objects in the school museum. They will supplement this knowledge by correspondence with school children in the various countries of Eurasia.

In these letters they will describe our own country and ask in return similar information regarding the foreign countries. Before writing these letters, however, they will in all ways possible acquaint themselves with these foreign countries. The writing of these letters will be a weekly class exercise, forming the basis for a series of lessons in English.

They will also exchange any material which will add to the geographical knowledge. This will include such articles as monthly paintings of the landscape, pressed leaves, collections of insects, butterflies, seeds, minerals and soils, photographs or sketches of interesting objects seen on field excursions, pictures of classes in the gymnasium or at work in the school-room, and sketches of articles made in the shop. Correspondence will begin at once with schools in Korea, China, India, Ceylon, Greece, Norway, and Japan. See Miss Baber's Outline of Geography.

Nature Study: Previous to this year, the pupils in the Eighth Grade have done no work in Nature Study. The Seventh Grade, therefore, is prepared to do the same line of work as the Eighth Grade. So for this year it has been deemed advisable to teach these grades in the same class. The plan for the work will be found among the Eighth Grade outlines.

Mathematics: Number will be correlated with Nature Study, Geography, and Manual Training. For additional work, see Mr. Flint's outline for Eighth Grade.

Speech, Oral Reading, and Dramatic Art: Julius Cæsar. Selection from Cicero's orations. Selection from *The Flight of Nydia*, Bulwer. Sight-reading of *One Who Lived Long, Long Ago*, from *Giovanni*, Frances Hodgson Burnett.

Manual Training and Industrial Art: This month the pupils will make Christmas presents, the articles to be made being chosen from the following list:

Woodwork: Cabinets, screens, glove-boxes, shelves, bookcases, tables, tabourettes, shirt-waist boxes.

Bent Ironwork: Lamps.

Hammered Brasswork: Candlesticks, trays.

Weaving: Baskets, cushions, bags, needle-books.

Clay Modeling and Casting: Candlesticks, statuettes, tiles, toys.

Sewing, Embroidery, and Applique: Sofa-pillows, table-covers, scarfs, belts, ornamental bands, book-covers.

Bookbinding: Illuminated verses with decorated book-covers.

Physical Training: In addition to the exercises and apparatus work with Mr. Kroh, the class will make a study of respiration in relation to ventilation.

Eighth Grade

Nott William Flint

Geography

The subject for the year is a review of the geography of the world through RIVERS. So far the children have been studying the birth and development of a typical river, using specific streams only as illustrations of particular points under discussion. From this time on they will take up specific rivers, and study each in some detail. The rivers to be discussed each month will be grouped in such a way as to illustrate some one feature of river history. During one month, for example, only tidal rivers will be treated; during another, delta rivers; during a third, rivers which have built their banks above the surrounding country, and so on. For December the group will consist of the most important delta rivers of Eurasia.

I. The Hoang-ho and Yang-tse-Kiang.

1. The Chinese delta plains. (a) Their extent. (b) Their fertility. (c) Kinds of crops. (d) Density of their population. (e) Floods. (f) Safety measures against floods.

2. Navigation on Chinese rivers. (a) Its importance in a country practically without railroads. (b) Kinds of craft. (c) Goods transported. (d) Scenery. (e) River life.

3. The great fertility and protected situation of the Chinese river plains as furnishing an ideal "nest-place" for a race.

II. The Brahmaputra and Ganges.

1. Their sources beyond the Himalayas. (a) They bring the drainage of the northern as well as of the southern slopes of the Himalayas into India. What does this tell us of the topography of the country?

2. Area of the combined deltas, 50,000 square miles. Depth, as tested by borings, 481 feet.

3. Richness of the soil.

4. Crops. (a) Kinds. (b) Number per year.

5. Density of population.

6. Scenery.

7. The Ganges as a sacred river. (a) Pilgrimages to Allahabad. (b) Sacred cities.

8. These plains as the cradle of the Hindu race.

III. The Danube.

1. Delta begins 45 miles from Black Sea and has area of 1,000 square miles; uncultivated.

2. Basin 300,000 square miles; 400 tributaries, of which 100 are navigable.

3. Upper courses frozen all winter. Danger from this source. Increased erosive power on this account.

4. Improvement of channel under international commission. Results. Expense met by river taxes.

5. Vienna.

IV. The Rhine.

1. Formed by drainage of 150 Swiss glaciers. Steep gradient in upper courses.

2. Purified in Lake of Constance.

3. Falls at Schaffhausen.

4. The picturesque Rhine, from Bergen to Siebengebirge. Narrow, rocky valley. Lateral ravines. Ruined castles. Vineyards.

5. Low banks in Holland. Embankments.

6. Character of lower course now compared with description in Roman records as an estimate of amount of work done.

7. One of chief waterways of Europe from earliest times. (a) Favorable Situation: Flows through populous and varied regions. Empties into much-frequented sea opposite England. Connected by Rhine-Rhône and Rhine-Marne canals with South of France and with basin of Danube by Ludwig's Canal.

8. Total weight of goods forwarded yearly, 1,000,000 tons; timber, coal, iron, agricultural produce, manufactured goods.

9. Timber rafts; floating villages.

10. Cities: Spires, Mainz, Coblentz, Bonn, Cologne, Düsseldorf.

11. Importance of Rhine in German thought and literature: Legends, ballads, Niebelungenlied.

12. Victor Hugo's dictum:

"Le Rhin réunit tout. Le Rhin est rapide comme le Rhône, large comme la Loire, encaissé comme la Meuse, tortueux comme la Seine, limpide et vert comme la Somme, historique comme le Tibre, royal comme le Danube, mystérieux comme le Nil, pailleté d'or comme un fleuve d'Amérique, couvert de fables et de fantômes comme un fleuve d'Asie."

References: Wells Williams, *The Middle Kingdom*; Hunter, *The Indian Empire*; Marshman, *History of India;* Encyclopædia Britannica, under *Rhine* and *Danube*.

Mathematics

The number work for the month will be correlated with the study of ventilation, history, and geography. In the subject of ventilation there will be as much applied mathematics as the class can handle.

In estimating the cubic volume of air in the various rooms the pupils will be required to make precise measurements, so that great care on their part will be necessary in estimating the corrections to be made for inequalities and projections of the wall, and for solid bodies. The students of the Seventh and Eighth Grades will not be too young to find the height of rooms and of buildings by triangulation, or by the use of the quadrant. To do this the class will need to work out at least one proposition in geometry: that the sides of similar triangles are in proportion.

In history there will be the comparison of the areas and populations of European countries.

In geography comparisons of the lengths of various rivers in Eurasia; comparisons of actual to direct lengths of rivers; computations of the size of river-basins, and of the carrying or erosive power of rivers. For instance, such examples as the following will be a great reinforcement to the study of geography:

The annual discharge of solids in solution by the Rhine is 92.3 tons per square mile of river. What is the total discharge per year?

How long will it take for the Rhine to wear its basin down one inch? etc.

From the history of Ostia, Ravenna, and Adria calculate how long it would take to build land into the sea a distance of one mile; of fifty miles.

Nature Study

For December and January—the cold months—the subject will be the warming and ventilation of houses. Beginning with its particular room, the class will proceed to study the fresh-air supply of the whole school, and will then visit some convenient public building to see a ventilating system in operation. Each student will also make a special report to the class on the means for ventilating his sleeping-room and the house he lives in. Before this subject is dropped, each pupil will present a drawing, accompanied by full explanations, embodying his idea of a system of ventilation for the new building of the Chicago Institute.

I. (a) The class might well begin this study by reading the cunning methods bees use to ventilate their hives in warm weather (see Encyclopædia Britannica, or Huber, on *Bees*). (b) Constituents of normal air: N 79%, O 20.96%, CO_2 .04%. Very pure air: O 20.99%, CO_2 .03%. Air beginning to be bad: O 20.60%. Air in which candles will not burn: O 18.27%. (c) Show the value of oxygen to animals, and of carbondioxide to vegetables.

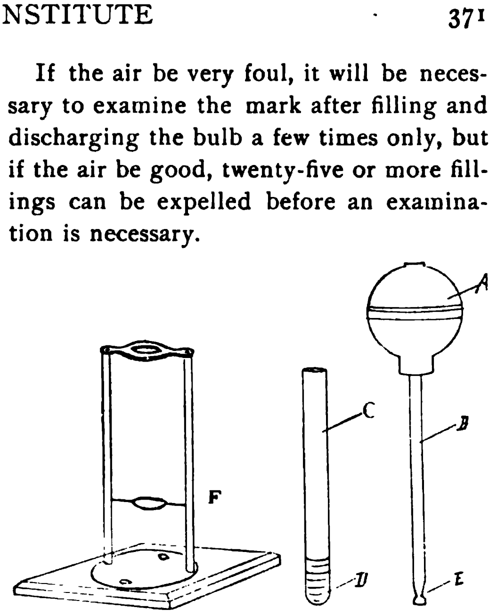
II. The breathing capacity of each child in the room will be tested and the average capacity for the room found. The pupils can then calculate precisely how much air should be brought into the room for their needs. Then, when they have discovered the absolute and imperative requirement of human beings for fresh air, they may study what possible variations in the proportions of the air constituents can be safely allowed, and how much air should be provided per hour for each person—1000–3000 cubic feet. The class will then be ready to experiment on air to find out the amount of CO_2 in a given volume.

For this experiment the best and simplest instrument is Wolfert's air-tester, which can be bought, or, preferably, made in any physics laboratory. The instrument will be easily understood from the accompanying diagram. A is a simple rubber bulb with a capacity of 28 cubic centimeters; B, a glass outlet tube with a constriction (E) near the open end; C, a glass test-tube 12 centimeters in length and 12 millimeters in diameter, with a horizontal mark near the bottom; the mark shows the height to which it must be filled with 3 cubic centimeters of perfectly clear lime-water. Upon the whitened bottom of the tube is stamped a black mark. A small standard (F), a swab, a vial of vinegar for cleaning the tube, and a bottle of clear lime-water completes the instrument.

To perform the experiment the test-tube should be filled with lime-water (a saturated solution) up to the horizontal mark. Then fill the rubber bulb with the air to be tested, insert the small tube nearly to the bottom of the lime-water, and expel the air as rapidly as may be without causing the bubbles to overflow from the test-tube, always taking care, however, to continue the pressure on the bulb until the small tube is removed from the lime-water. Repeat this process until the black mark is quite obscured by the opacity produced by the reaction of the carbonic acid upon the lime-water. The observer's point of view must be from above the mouth of the test-tube.

After each observation the tube should be washed out and wiped dry. Should a white incrustation form on the sides of the tube it can be removed with a swabbing of vinegar. The experiment should be performed by daylight, with the tube held over some white background, as a sheet of writing-paper; and care should be taken lest the result be made valueless by the experimenter's breath.

If the air be very foul, it will be necessary to examine the mark after filling and discharging the bulb a few times only, but if the air be good, twenty-five or more fillings can be expelled before an examination is necessary.



Should the mark become obscured after expiring the bulb ten or fifteen times only, that air is unfit for continuous respiration. In a sick-chamber the air should be so pure that the mark will not become invisible under the turbidity in less than thirty to forty expirations.

The following table (compiled by Professor Wolfert) will show the amount of carbonic acid in the tested air. The table reads down, *i. e.*, if one filling of air makes the lime-water turbid there would be 200 volumes of CO_2 in 10,000 volumes of air:

Number of Fillings.	Carbonic Acid per 10 M.	Number of Fillings.	Carbonic Acid per 10 M.	Number of Fillings.	Carbonic Acid per 10 M.	Number of Fillings.	Carbonic Acid per 10 M.
1	200	16	12.5	31	6.4	46	4.3
2	100	17	12	32	6.3	47	4.2
3	67	18	11	33	6.1	48	4.1
4	50	19	10.5	34	5.9	49	4.1
5	40	20	10	35	5.7	50	4
6	33	21	9.5	36	5.5	51	3.9
7	29	22	9.1	37	5.4	52	3.9
8	25	23	8.7	38	5.3	53	3.8
9	22	24	8.3	39	5.1	54	3.7
10	20	25	8	40	5	55	3.7
11	18	26	7.7	41	4.9	56	3.6
12	16	27	7.4	42	4.8	57	3.5
13	15	28	7.1	43	4.6	58	3.5
14	14	29	6.9	44	4.5	59	3.4
15	13	30	6.6	45	4.4	60	3.3

NOTE.—If Wolfert's air-tester cannot be bought or made, the experiment can be performed by using ordinary bottles—a 16-oz., 12-oz., 10-oz., 8-oz., 6-oz., 4-oz. sizes—and pouring into each half an ounce of saturated solution of lime-water. Then, after filling the remainder of space with air to be tested, cork and shake the bottles, and put them by. If, after standing, each bottle should show a turbidity in its lime-water, there would be in the air of the 12-oz. bottle less than .04% of CO_2; in the 10-oz. more than .05%; in the 8-oz. more than .06%; in the 6-oz. .08%; and in the 4-oz. more than .1%.

Oral Reading: *Horatius at the Bridge*, continued; Cicero, *First Oration against Catiline; Julius Cæsar;* Bulwer, Flight of Nydia (*Last Days of Pompeii*); F. H. Burnett, *Giovanni.* Training in hearing and producing English vowel sounds. (See Bell's vowel table in outline for Oral Reading.)

Manual Training: See the November outline. The chalk-modeling of river valleys, and basins will go on with a view to modeling Eurasia at the end of the study. The children will paint typical winter landscapes in connection with their meteorological observations.

Music: *Christmas Bells*, Niels Gade, text by Hans Christian Andersen, December COURSE OF STUDY; *Christmas Bells*, text by Longfellow, Modern Music Series, Second Book, Eleanor Smith; *Ye Shepherds, Arise*, Reinecke, 50 Children's Songs; *St. Christopher*, Mrs. Crosby Adams, December COURSE OF STUDY; *Old Christmas*, Modern Music Series, Second Book, Eleanor Smith; *Winter Song*, Modern Music Series, First Book, Eleanor Smith; *The Christmas Tree*, Edward Grieg (Augener & Co. edition).

Latin: (Katharine M. Stillwell.) On opening school it was found that few of the Sixth and Seventh Grade pupils had studied either French or German. So it was thought best for this year to teach Latin in the Eighth Grade only.

The series of lessons as planned for beginners has been used in this grade, and the work will be continued according to the following outline:

Reading Lesson

1. Aliæ mēnsæ sunt marmoreæ, sed aliæ sunt citreæ.
2. Sellæ nōn multæ sunt.
3. Tua sella nōn est cathedra.
4. Mea sella est dūra.
5. Puella est in cathedrā.

Vocabulary

NOUN.

cathedra—easy chair.

ADJECTIVE.

dūra—hard.

Points to be Made

1. General review.
2. Write the conjugation; third, present indicative.

Reading Lesson

1. Puella ad scholam it.
2. Puella ā villā ad scholam it.
3. Schola est in pergulā.
4. Schola prīmā hōrā incipit.
5. Puella semper cum servā it.
6. Servæ capsās puellīs ad scholam ferunt.
7. Sellæ sunt in scholā.
8. Puellæ in sellīs sunt.
9. In tabellīs scrībunt.
10. Tabellæ sunt cēreæ.
11. Prīmā hōrā tabellæ puellārum sunt vacuæ.
12. Quintā hōrā sunt plēnæ litterārum.
13. In scholā puellæ litterās discunt et scrībunt.
14. Græcam linguam discunt.
15. Arithmēticam discunt.
16. Litterās et Græcās et Rōmānās discunt.

Vocabulary

NOUNS.

schola—school.
pergula—shop
hōra—hour.
capsa—satchel.
tabella—tablet.
lingua—language.
arithmētica—arithmetic
litteræ—literature

VERBS.

eō—go.
incipiō—begin.
ferō—carry.
scrībō—write.
discō—learn.

PREPOSITIONS.

cum—with.
ad—to.
in—in.
ā or āb—from.

ADVERBS.

semper—always.
sæpe—often.
nunc—now.

ADJECTIVES.

prima—first.
cērea—waxen.
vacua—empty.
plēna—full.
Græca—Greek.
Rōmāna—Roman.
quinta—fifth.
sōla—alone.

Points to Be Made

1. Ablative.
(a) Separation.
(b) Sociative.
c. Time when.
2. Ad—with the accusative (place to which).

Questions to be Answered in Latin

1. Does the Roman girl go to school alone?
2. Who is with her?
3. What does the servant do for her?
4. When does she go to school?
5. What is on her tablet?
6. Where is the tablet?
7. Do Roman girls ever learn the Greek language first?
8. What literature do they read?

Reading

1. Mātrōna Rōmāna tunicam gerit.
2. Stolam et pallam gerit.
3. Stola est longa et albra.
4. Mātrōnæ Rōmānæ umbellās ferūnt.
5. Tunica mātrōnæ est lānea.
6. Serva lānam dēducit.
7. Mātrōnæ texit.

Vocabulary

Nouns.
mātrōna—matron.
stola—stole.
umbella—umbrella.
lāna—wool.

Adjectives.
lānea—woolen.

Verbs.
dēducō—spin.
texō—weave.

Adverbs.
ubi—where.
ibi—there.

Points to be Made

1. Genitive.
2. Dative. (Indirect object.)

Questions to be Answered in Latin

1. What does the Roman matron wear?
2. Describe the tunic.
3. Describe the stole.
4. Who spins the wool for the matron?
5. Where do they spin?

Reading

1. Plērumque stola mātrōnæ est lānā albā.

2. Cum mātrōna Rōmāna tunicam cōnexuit tum stolam induit.

3. Tum plērumque zōnā laneā cingit.

4. Dominæ līneās tunicās nōn plērumque gerunt, sed sæpe ancillæ gerunt.

5. Ancillæ lānam texunt, sed numquam sine dominā.

Vocabulary

Nouns
zōna—girdle.
domina—mistress.
ancilla—maid-servant.

Preposition with Ablative.
sine—without.

Conjunction.
cum—when.

Verbs.
cingō—bind.
induō—put on.

Adverbs.
tum—then.
numquam—never.
plērumque—generally.

Adjective.
līnea—linen.

Points to be Made

1. Assumptive sentences.
2. Ablative means.
3. Perfect tense.

Writing Lesson

Class will write about the school, using the first person.

Review Grammar

Declension of nouns and adjectives.

Reading

1. Puer Rōmānus bullam gerēbat.

2. Togam prætextam gerēbat.

3. Clāvus lātus et purpureus togam prætextam dīstinguēbat.

4. Cum puerī septem annōs nātī erant, ad scholam grammaticam ībant.

5. Puer erat numquam sine pædagōgō, Græcō servō, quī Græcā linguā eum īnstituēbat.

Vocabulary

Nouns.
toga prætexta — dress of youth.
clāvus — band.
puer — boy.
pædagōgus — tutor.
servus — slave.

Pronoun.
eum.

Verbs.
dīstinguō — distinguish.
īnstituō — educate.

Adjectives.
lātus — broad.
grammaticus — grammar.

Points to be Made

1. Nouns; second, declension, masculine.
2. Imperfect tense.
3. Septem annōs nātī — idiom.
4. Pronouns.

Questions to be Answered in Latin

1. What did the Roman boy wear?
2. When did he attend the grammar school?
3. What did he learn there?
4. Who taught him the Greek language?

Reading

1. Ubi schola fuit? (Answer in Latin.)
2. Nōnne schola incēpit hōrā prīmā?
3. Sellæ erant in scholā.
4. Puerī in sellīs erant ante magistrum.
5. Quid in scholā puerī Rōmānī discēbant?
6. In scholā discēbant legere et scrībere.
7. Scrībēbant in tabellīs stilō, sī charta nōn fuit.
8. Græcam linguam discēbant.
9. Perdiscēbant opera Naevii et Ennii, prīmōrum poētārum Latinōrum.
10. Arithmēticam discēbant.
11. Charta nōn erat, ergō tabula erat cuīque puerō.
12. Tabulīs pictīs in mūrīs scholæ fābulās discēbant.
13. Ferula quoque erat in scholā.

Vocabulary

NOUNS.	VERB.
magister—master (school).	legere—to read.
stilus—writing instrument.	PREPOSITION.
charta—paper.	ante—in front of.
opus—work.	CONJUNCTIONS.
poēta—poet.	sī—if.
ferula—rod.	ergō—therefore.
fābula—story.	PRONOUN.
mūrus—wall.	quisque.
tabula picta—painting.	INTERROGATIVE
ADJECTIVE.	PARTICLES.
Latīnus—Latin.	Quid—what.
	Nōnne.

Points to Be Made

1. Question with nōnne.
2. Conditional, sī.

Reading

1. Schola Rōmāna bona fuit, sed magister sevērus fuit.
2. Sevērus quidem fuit, sed iūstus et bonus.
3. Impiger is fuit.
4. Discipulus cum malus est, schola quoque mala est.
5. Vīsne scholam tuam esse bonam?
6. Puer quī nōn attentus est, numquam parātus est.
7. Tūne semper attentus es?
8. Cum scholæ hōra est, opus fac; cum lūdī hōra est lūdō tē dā.
9. Sīc semper lætus eris.

Vocabulary

NOUNS.	parātus—prepared.
discipulus—pupil.	lætus—happy.
lūdus—play.	impiger—energetic.
ADVERBS.	VERBS.
quidem—indeed.	volō (vis)—wish.
sīc—thus, in that way.	faciō (fac)—do.
ADJECTIVES.	dō (da)—give.
sevērus—stern, severe.	esse—to be.
iustus—just.	PRONOUN.
attentus—attentive.	tū—second person.

Writing Lessons

Write a comparison between a Roman and an American school.

Write paradigms.

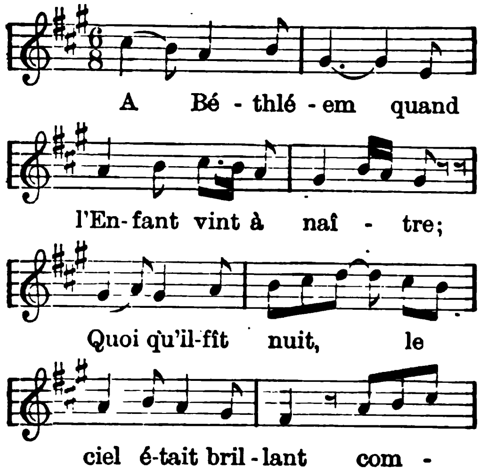
First declension nouns.

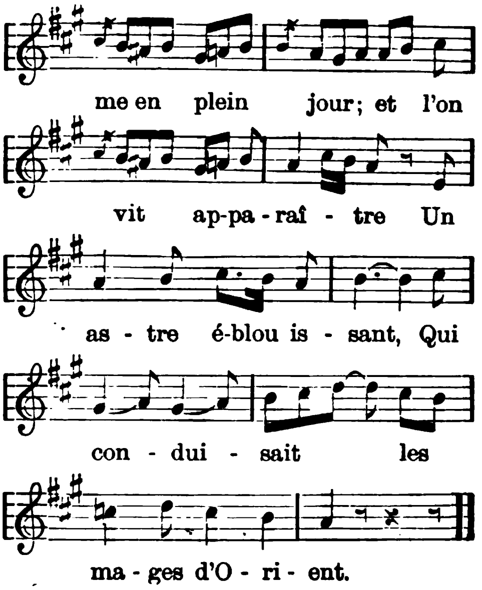
Second declension nouns, masculine.

Verbs, third conjugation, indicative mode, present, imperfect, future and perfect tenses.

Write the declension of adjectives to agree with nouns.

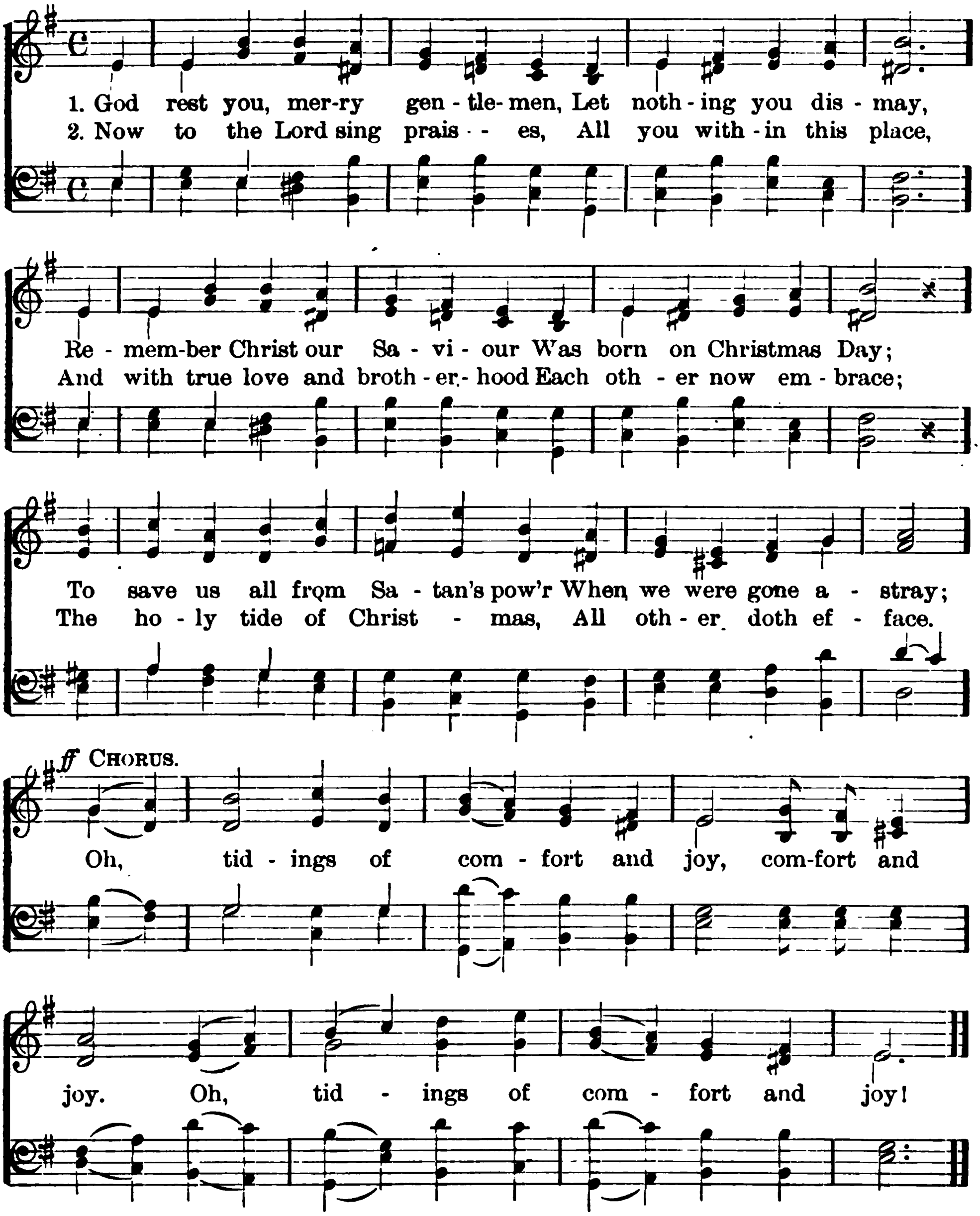
French Christmas Song





God Rest You, Merry Gentlemen

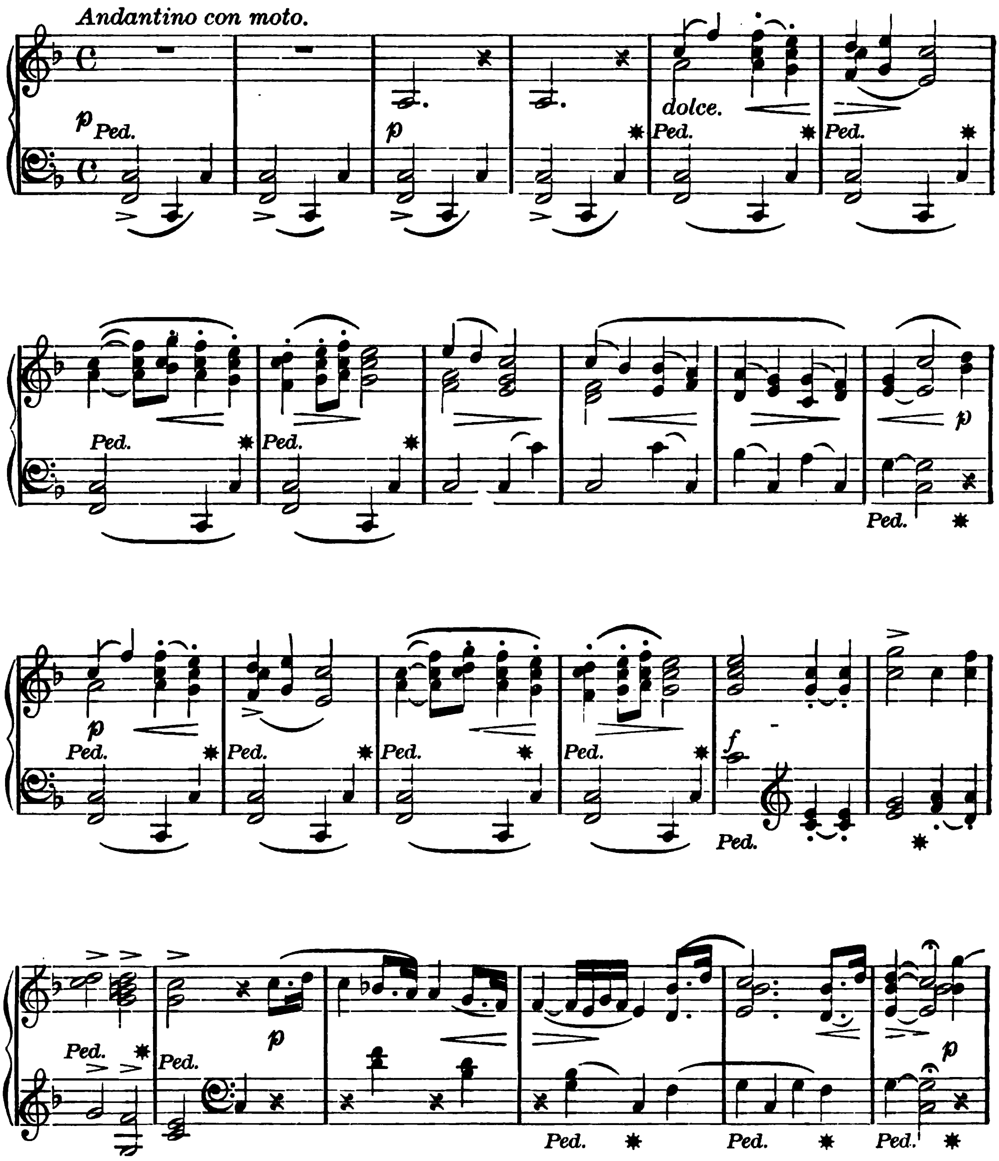
OLD ENGLISH CHRISTMAS CAROL.

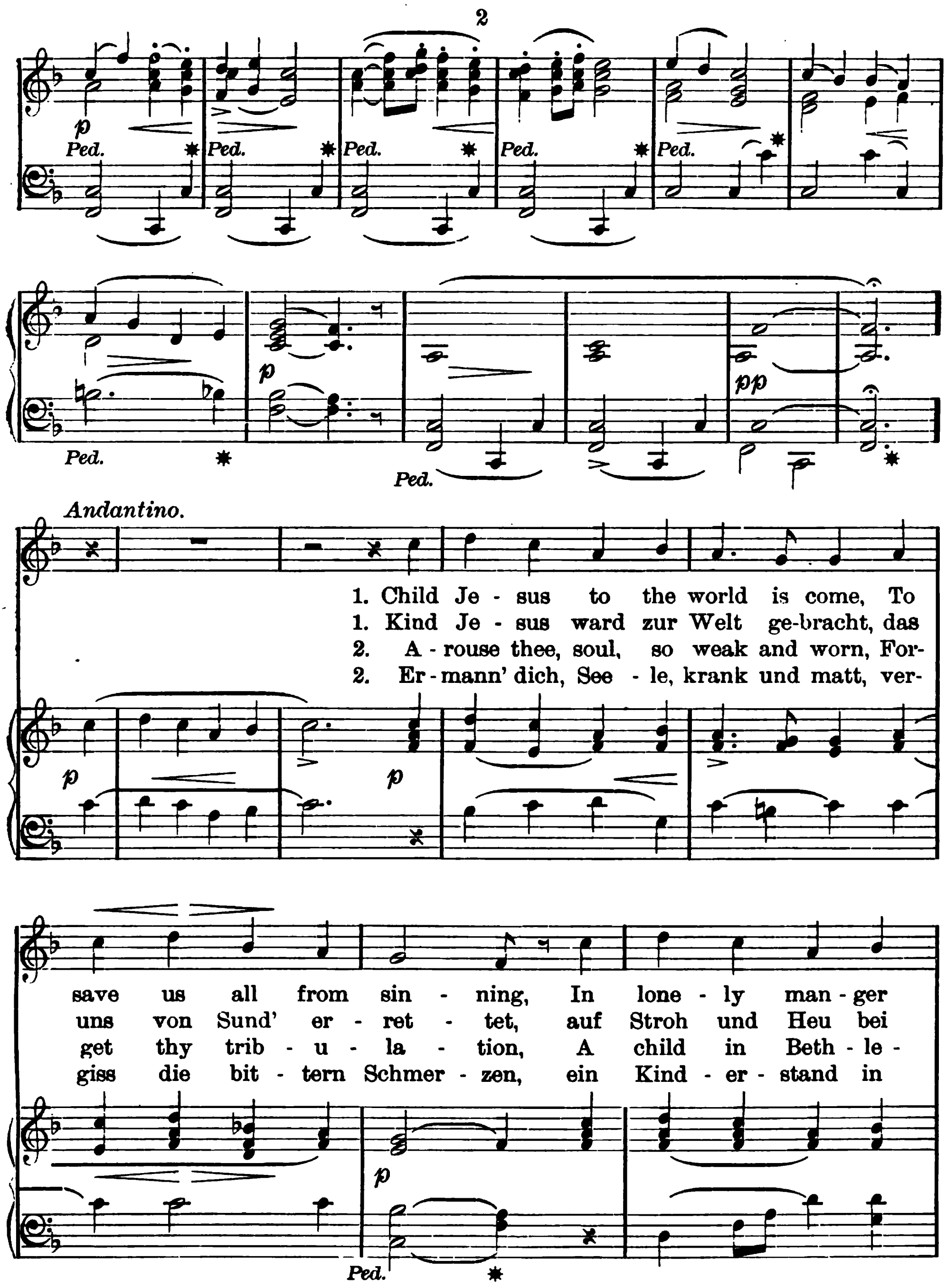

1. God rest you, mer-ry gen - tle- men, Let noth - ing you dis - may,
2. Now to the Lord sing prais - - es, All you with - in this place,
Re - mem-ber Christ our Sa - vi - our Was born on Christmas Day;
And with true love and broth - er - hood Each oth - er now em - brace;
To save us all from Sa - tan's pow'r When we were gone a - stray;
The ho - ly tide of Christ - mas, All oth - er doth ef - face.
ff CHORUS.
Oh, tid - ings of com - fort and joy, com-fort and
joy. Oh, tid - ings of com - fort and joy!

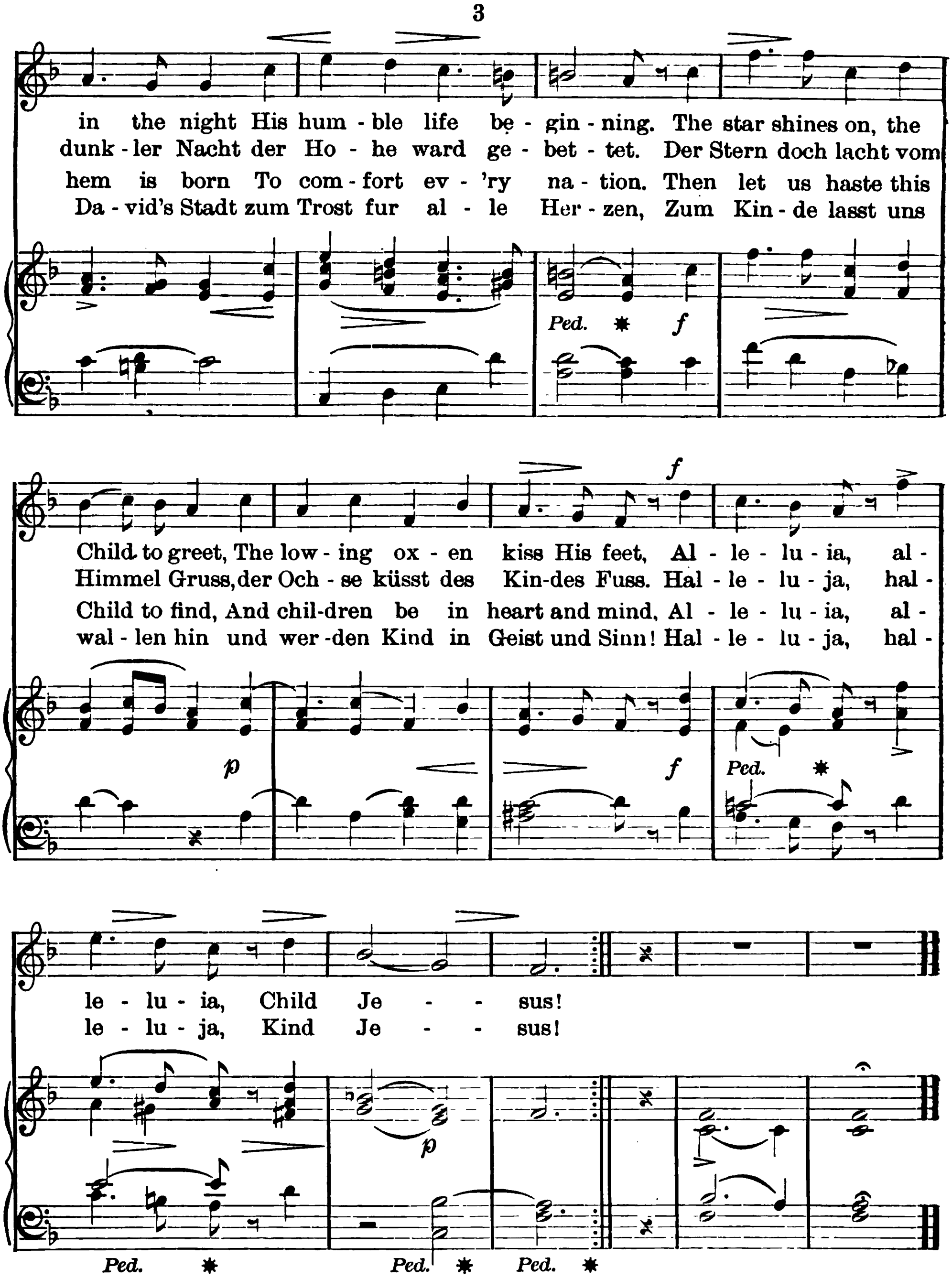
Christmas Hymn

(Die Weihnachts-Glocken.)

Hans Christian Anderson. **Niels Gade.**

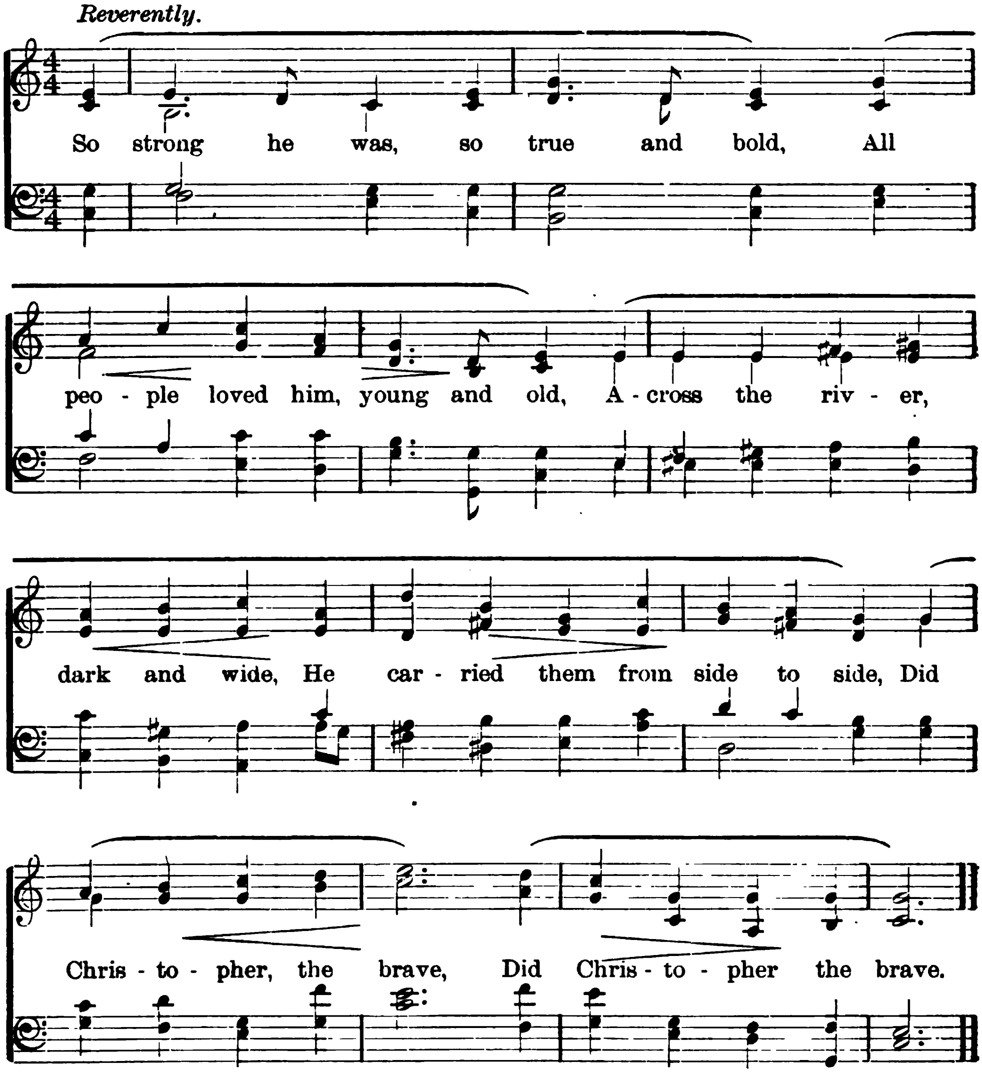



2
Andantino.
1. Child Je - sus to the world is come, To save us all from sin - ning, In lone - ly man - ger
1. Kind Je - sus ward zur Welt ge-bracht, das uns von Sund' er - ret - tet, auf Stroh und Heu bei
2. A - rouse thee, soul, so weak and worn, For- get thy trib - u - la - tion, A child in Beth - le -
2. Er - mann' dich, See - le, krank und matt, ver- giss die bit - tern Schmer - zen, ein Kind - er - stand in


3
in the night His hum - ble life be - gin - ning. The star shines on, the
dunk - ler Nacht der Ho - he ward ge - bet - tet. Der Stern doch lacht vom
hem is born To com - fort ev - 'ry na - tion. Then let us haste this
Da - vid's Stadt zum Trost fur al - le Her - zen, Zum Kin - de lasst uns
Ped. ✱ f
Child to greet, The low - ing ox - en kiss His feet, Al - le - lu - ia, al -
Himmel Gruss, der Och - se küsst des Kin-des Fuss. Hal - le - lu - ja, hal -
Child to find, And chil-dren be in heart and mind, Al - le - lu - ia, al -
wal - len hin und wer - den Kind in Geist und Sinn! Hal - le - lu - ja, hal -
f
p
f
Ped. ✱
le - lu - ia, Child Je - - sus!
le - lu - ja, Kind Je - - sus!
p
Ped. ✱
Ped. ✱
Ped. ✱

St. Christopher

Anne Elizabeth Allen. Mrs. Crosby Adams.


Reverently.
So strong he was, so true and bold, All
peo - ple loved him, young and old, A - cross the riv - er,
dark and wide, He car - ried them from side to side, Did
Chris - to - pher, the brave, Did Chris - to - pher the brave.

2. His King he loved, his King he served,
Through weather cold, nor ever swerved
From work that cost him toil and pain,
From work that showed so little gain,
This Christopher the brave.

3. May little children serve this King,
As this good man, and to Him bring
Just what they have that's best and true,
To give unto the King he knew,
St. Christopher, the brave.

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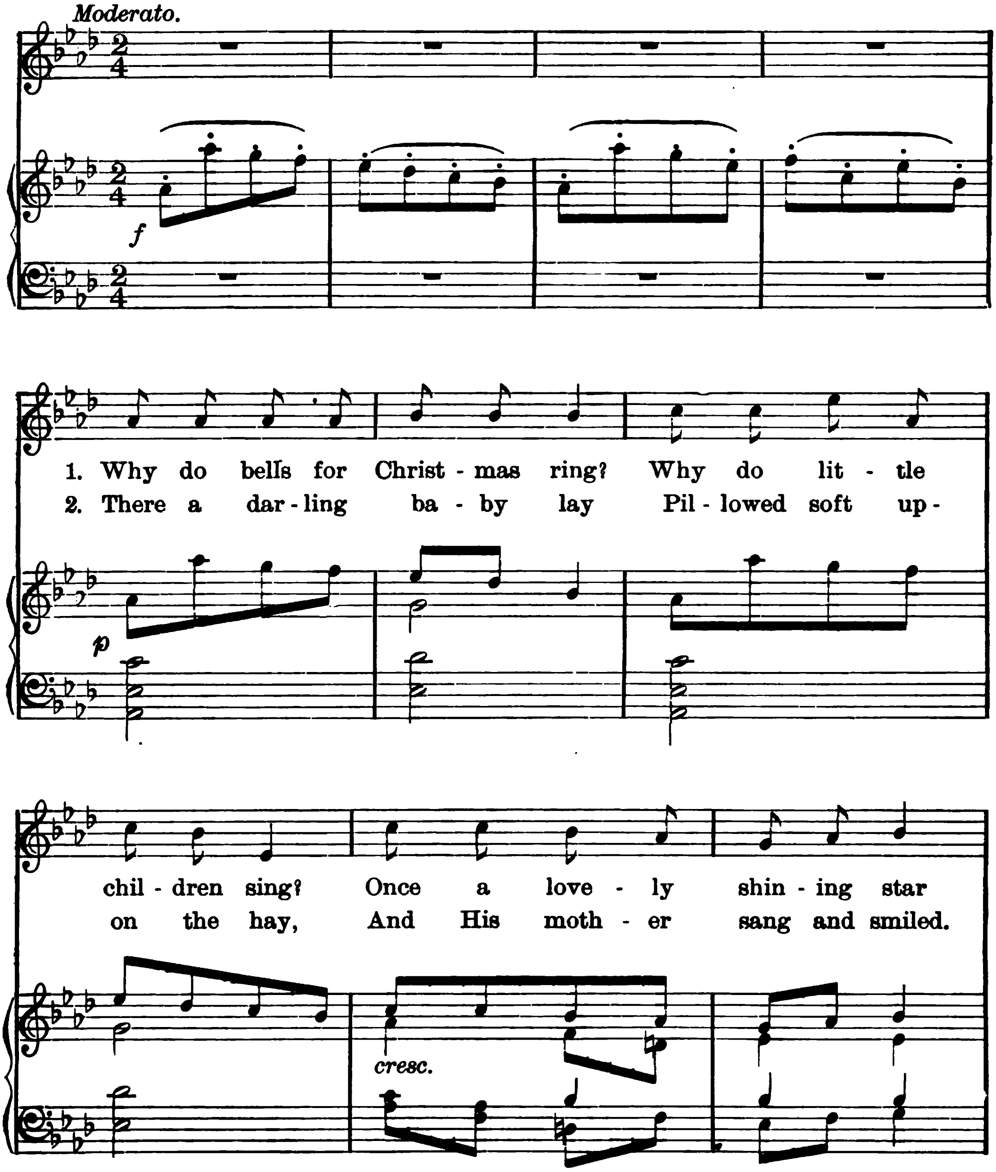
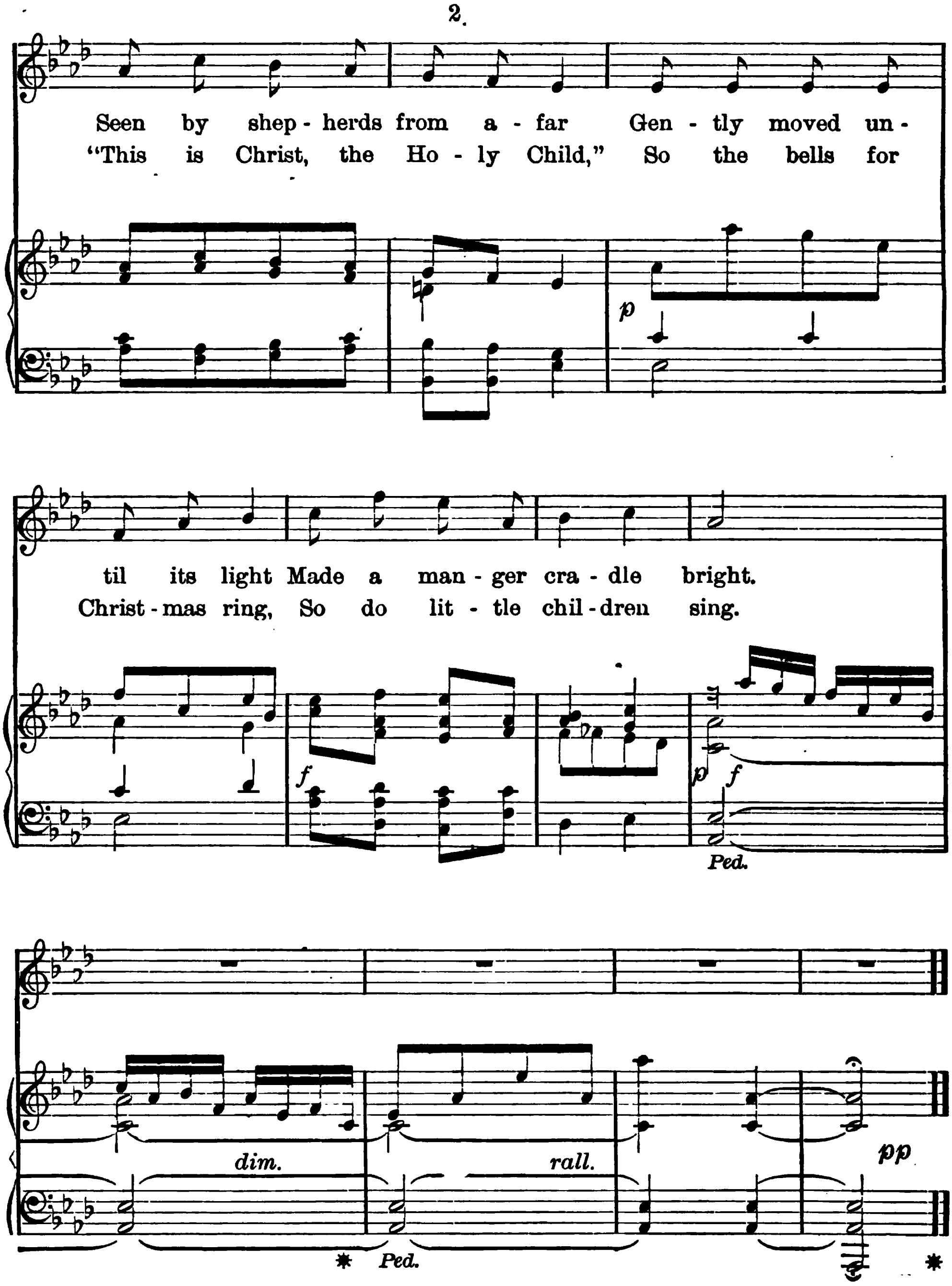
Christmas Song

LYDIA AVERY COONLEY. FREDERIC W. ROOT.


Moderato.
f
p
1. Why do bells for Christ - mas ring? Why do lit - tle chil - dren sing? Once a love - ly shin - ing star
2. There a dar - ling ba - by lay Pil - lowed soft up - on the hay, And His moth - er sang and smiled.
cresc.

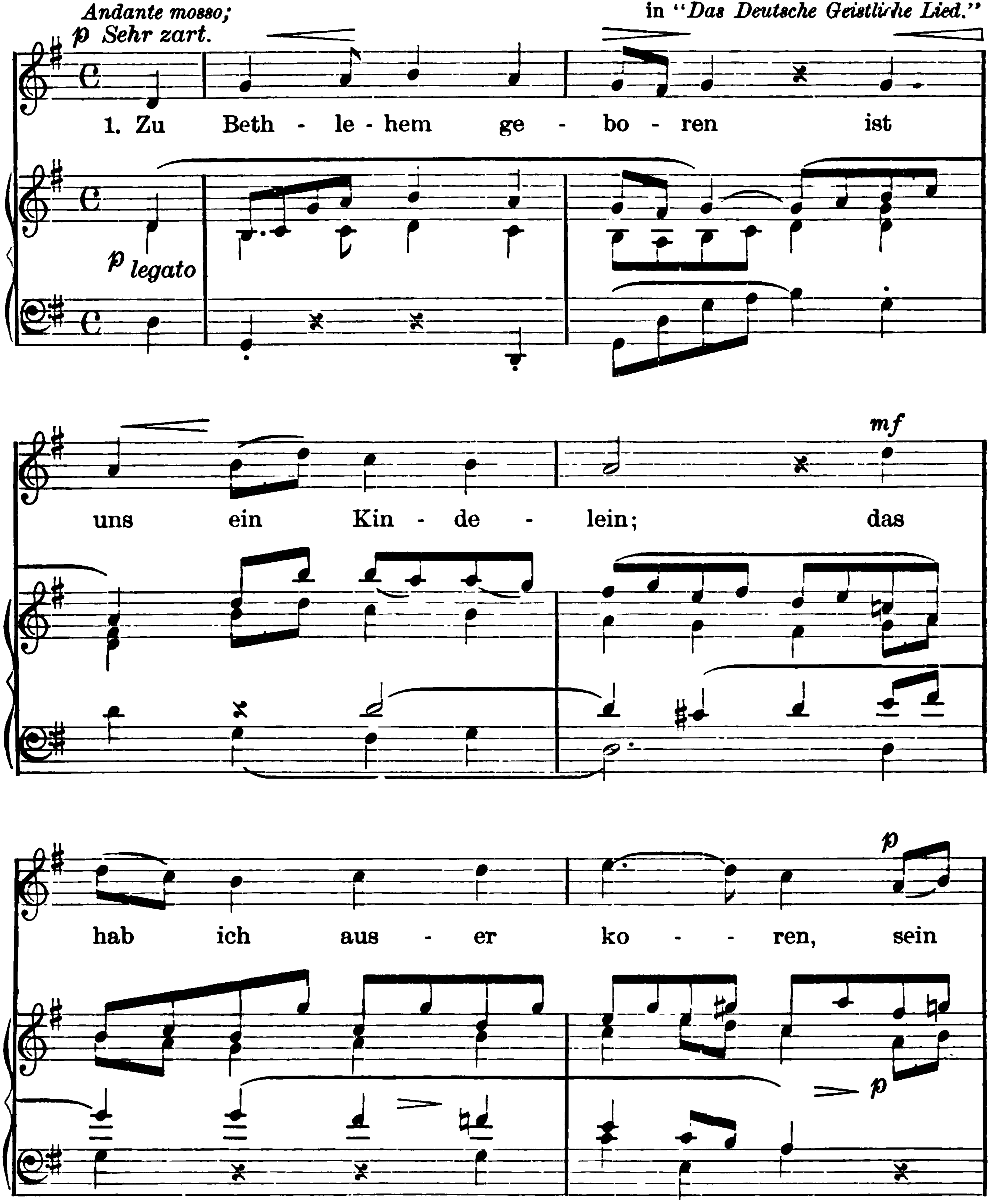
From "Singing Verses for Children," by permission.

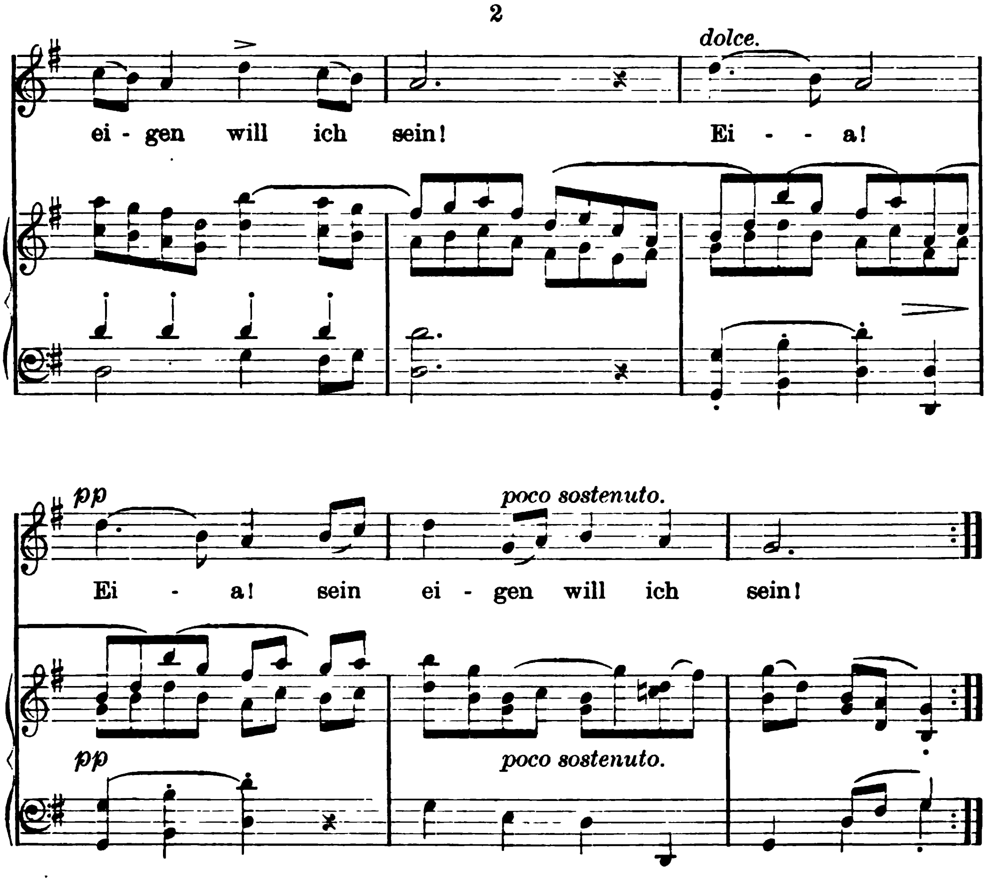

2.
Seen by shep - herds from a - far Gen - tly moved un - til its light Made a man - ger cra - dle bright.
"This is Christ, the Ho - ly Child," So the bells for Christ - mas ring, So do lit - tle chil - dren sing.
p
f
p f
Ped.
dim.
rall.
pp
Ped.

"Zu Bethlehem Geboren"

Geistliches Volksleid (1638)

Edited and arranged by
Dr. Heinrich Reimann,
in "*Das Deutsche Geistliche Lied.*"


Andante mosso;
p Sehr zart.
p legato
1. Zu Beth - le - hem ge - bo - ren ist
uns ein Kin - de - lein;
mf
das
hab ich aus - er ko - - - ren,
p
sein
p

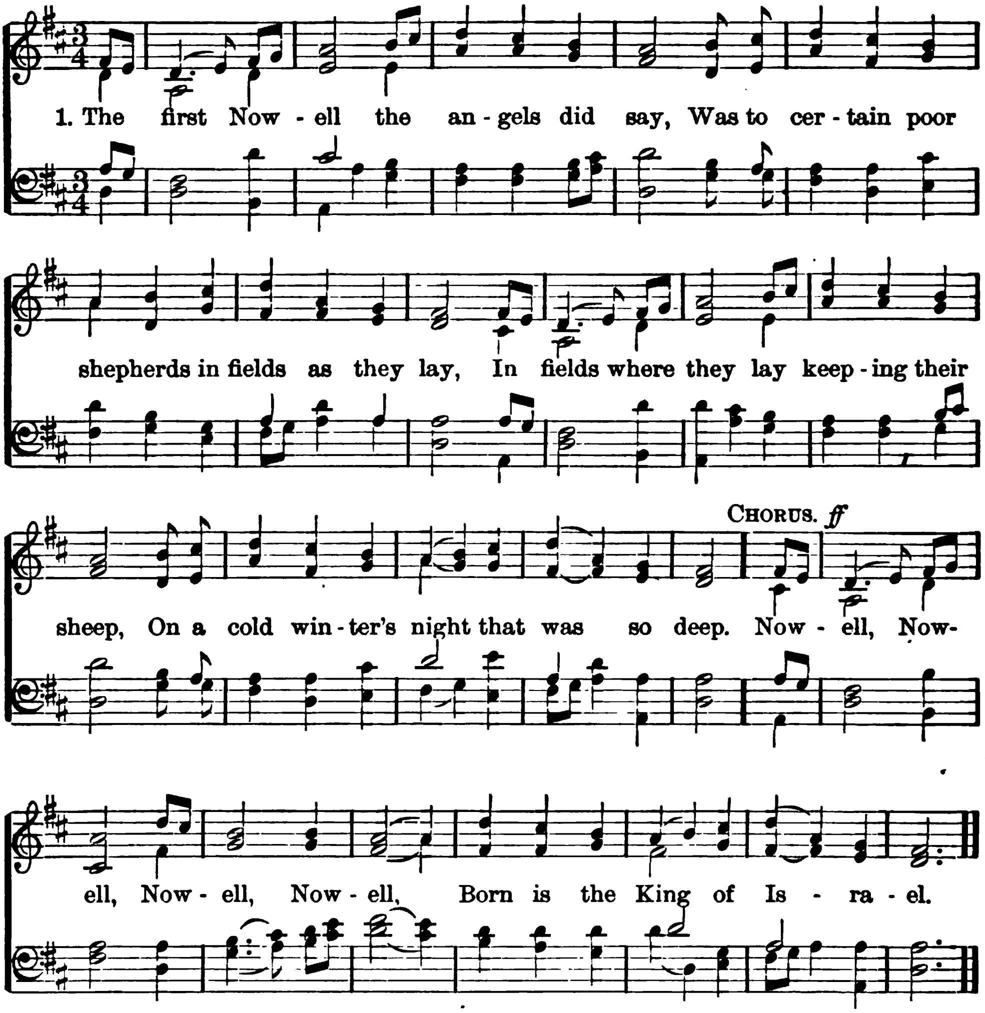


2. Aus ganzen, reinem Herzen
Will ich dich lieben, Herr,
In Freuden und in schmerzen,
Je länger und je mehr.
Eia! Eia! je länger und je mehr.

3. Lass mich vom dir nicht scheiden,
Verknüpfe du das Band
Der Liebe zwischen beiden,
Nimm' hin mein Herz zum Pfand!
Eia! Eia! Nimm' hin mein Herz zum Pfand!

The First Nowell

Old English Christmas Carol.


1. The first Now - ell the an - gels did say, Was to cer - tain poor
shepherds in fields as they lay, In fields where they lay keep - ing their
sheep, On a cold win - ter's night that was so deep. Now - ell, Now-
Chorus. *ff*
ell, Now - ell, Now - ell, Born is the King of Is - ra - el.

2. They looked up and saw a star
Shining in the east beyond them far,
And to the earth it gave great light,
And so it continued both day and night.

3. And by the light of that same star
Three wise men came from country far;
To seek for a King was their intent,
And to follow the star wherever it went.

4. This star drew nigh to the North West
O'er Bethlehem it took its rest,
And there it did both stop and stay,
Right in the place where Jesus lay.

5. Then entered in those wise men three,
Fell reverently upon their knee,
And offered there in His Presence
Their gold and myrrh and frankincense.

Christmas Reading List

Description

Alton, Edmund	*The Children's Christmas Club of Washington City. St. Nicholas,* v. 15, p. 147	
Beard, L., and Beard, A. B.	*Christmas Festivities.* (See their *American Girls' Handy Book,* p. 317-45.)	Scribner, 1898.
Boner, C.	*Transylvania,* p. 411-12	Longmans, 1865.
Calderon de la Barca.	*Life in Mexico,* p. 37-8 and 237-40	Chapman and Hall, 1843.
Chambers, R., ed.	*Christmas Day.* (See his *Book of Days,* v. 2, p. 744-63.)	
Dickens, Charles	*Christmas Tree.* (See his *No Thoroughfare,* p. 381-404.)	Estes.
Hawthorne, Nathan'l	*English Note-Books,* v. 2, p. 177-8 and 386	Houghton, 1897.
Hervey, T. K.	*The Book of Christmas*	Wiley, 1845.
Irving, Washington	*Christmas.* (See his *Sketch Book,* p. 254-61).	Putnam, 1881.
O'Rell, Max	*John Bull and His Island,* p. 89-92	Scribner, 1884.
Pritchard, S. J.	*The First Christmas Tree in New England. St. Nicholas,* v. 15, p. 131	
Proudfoot, A. H.	*Child's Christ Tales*	Chicago, 1886.
Reddall, H. F.	*Christmas.* (See his *Fact, Fancy and Fable,* p. 125-6.)	McClurg, 1892.
Thackeray, W. M.	*Round About the Christmas Tree.* (See his *Denis Duval,* p. 271-8.)	Harper, 1899.
Whitling, H. J.	*Pictures of Nuremburg,* v. 1, p. 222-4	Bentley, 1850.
Wiggin, R. D., and Smith, N. A.	*The Story of Christmas.* (See their *Story Hour,* p. 101-6.)	Houghton, 1899.

Christmas in Other Lands

Ambrosi, Marietta	*Christmas Eves.* (See his *Italian Child Life,* p. 25-9.)	Lothrop, 1892.
Feudge, F. R.	*Christmas in the Far East. St. Nicholas,* v. 3, p. 165-7	
Hay, John	*Christmas in Spain. St. Nicholas,* v. 1, p. 122-4.	
Kniper, A. C.	*St. Nicholas Day in Holland. St. Nicholas,* v. 24, p. 233-5.	
Lloyd, L.	*Christmas.* (See his *Peasant Life in Sweden,* p. 162-218.)	Trusley, 1870.
Meldrum, D. S.	*Sint Nicolaas.* (See his *Holland and the Hollanders,* p. 84-9.)	Dodd and Mead, 1900.
Musick, J. R.	*Holidays at Honolulu.* (See his *Hawaii: Our New Possessions,* p. 230-5.)	Funk, 1898.
Nansen, F.	*Christmas at Godthaat.* (See his *First Crossing of Greenland,* p. 410-16.)	Longmans, 1897.
Pennell, E. R.	*London Christmas Pantomimes, St. Nicholas,* v. 15, p. 180-9	
Strutt, Joseph	*Fool's Dance.* (See his *Sports and Pastimes of the People of England,* p. 308-10.)	Chatto and Windus, 1898.

Strutt, Joseph	*Lord of Misrule.* (See his *Sports and Pastimes of the People of England,* p. 440-50.)	Chatto and Windus, 1898.
Strutt, Joseph	*Mummings and Masquerades.* (See his *Sports and Pastimes of the People of England,* p. 342-6.)	Chatto and Windus, 1898.
Wallace, E. S.	*Christmas in Bethlehem. St. Nicholas,* v. 24, p. 92-8	
Woodbury, J. H.	*Christmas in the Arctic Circles. St. Nicholas,* v. 3, p. 157	

Poems

Alt, F. M.	*The Fool's Christmas. St. Nicholas,* v. 22, p. 152-4	
Bayly, T. H.	*The Mistletoe Bough.* (See Bellamy and Goodwin, *Open Sesame,* v. 3, p. 354-6.)	Ginn, 1892.
Benjamin, C. L.	*Johnny's Observations on Christmas Eve. St. Nicholas,* v. 23, p. 204	
Blodgett, H. F.	*December. St. Nicholas,* v. 22, p. 91-3	
Brotherton, A. W.	*A December Ditty. St. Nicholas,* v. 18, p. 219.	
Burke, S. J.	*Santa Claus Street in Jingletown. St. Nicholas,* v. 24, p. 245	
Bush, B. E.	*The Christmas Song of Caedmon. St. Nicholas,* v. 23, p. 145-6	
Butterworth, H.	*For Christmas Day. St. Nicholas,* v. 17, p. 186-7	
	Christmas Carol. (See Bellamy and Goodwin, *Open Sesame,* v. 2, p. 354-5.)	Ginn, 1891.
	A Christmas Carol. (See Norton, C. E., *Heart of Oak Books.* v. 3. p. 144.)	Heath, 1898.
Cone, H. G.	*In Christmas Season Long Ago. St. Nicholas,* v. 14, p. 83	
Cone, H. G.	*The Little Christmas Spy. St. Nicholas,* v. 16, p. 83	
Coolidge, G. F.	*Christmas on the "Polly." St. Nicholas,* v. 17, p. 246-7	
Coolidge, S.	*The Little Christmas Tree. St. Nicholas,* v. 13, p. 81	
Cranch, C. P.	*How Willie Coasted by Moonlight. St. Nicholas,* v. 3, p. 168-70	
D., M. M.	*Christmas Eve. St. Nicholas,* v. 19, p. 95	
Dodge, M. M.	*The Bloom of the Christmas Tree. St. Nicholas,* v. 20. p. 89	
Dodge, M. M.	*Song of St. Nicholas.* (See her *Rhymes and Jingles,* p. 39-41.)	Scribner, 1898.
Dodge, M. M.	*Stocking Song on Christmas Eve.* (See her *Rhymes and Jingles,* p. 37.)	Scribner, 1898.
Dommett, Alfred	*A Christmas Hymn.* (See Bellamy and Goodwin, *Open Sesame,* v. 2, p. 355-7.)	Ginn, 1891.
Field, Eugene.	*Christmas Treasures.* (See his *With Trumpet and Drum,* p. 115-7.)	Scribner, 1899.
Guiney, L. I.	*Tryste Noel.* (See Warner, C. D., *Library of the World's Best Literature,* v. 41, p. 16,874-5.)	International Society, 1897.

Glen, K. Y.	*Old Dolly. St. Nicholas,* v. 25, p. 167-8.	
	Good News on Christmas Morning. St. Nicholas, v. 3, p. 177	
Herford, Oliver	*Christmas Legend.* (See his *Bashful Earthquake,* p. 52-3.)	Scribner, 1898.
Hutchinson, H. T.	*A Christmas Letter. St. Nicholas,* v. 17, p. 113.	
	I Saw Three Ships. (See Bellamy and Goodwin, *Open Sesame,* v. 2, p. 362-3.)	Ginn, 1891.
	In Excelsis Gloria. (See Bellamy and Goodwin, *Open Sesame,* v. 2, p. 364-5.)	Ginn, 1891.
Jenks, T.	*A Gentle Reindeer. St. Nicholas,* v. 18, p. 244.	
	The Knighting of the Sirloin of Beef by Charles the Second. (See Bellamy and Goodwin, *Open Sesame,* v. 2, p. 365-6.)	Ginn, 1891.
Larcom, Lucy	*Christmas Green.* (See her *Poems,* p. 176-8.)	Houghton, 1884.
Larcom, Lucy	*Christmas Thought.* (See her *Poems,* p. 175.)	Houghton, 1884.
Larcom, Lucy	*Visiting Santa Claus. St. Nicholas,* v. 12, p. 82-4	
Larcom, Lucy	*Woman's Christmas.* (See her *Poems,* p. 311-12.)	Houghton, 1884.
Longfellow, H. W.	*Christmas Carol.* (See his *Poetical Works,* v. 6, p. 432-3.)	Houghton, 1891.
Longfellow, H. W.	*Christmas Carol.* (See his *Poetical Works,* v. 6, p. 317-9.)	Houghton, 1897.
Longfellow, H. W.	*King Olaf's Christmas.* (See his *Poetical* Works, v. 4, p. 82-4.)	Houghton, 1897.
Lowell, J. R.	*Christmas Carol.* (See his *Poetical Works,* v. 4, p. 181-2.)	Houghton, 1898.
Lowell, J. R.	*Vision of Sir Launfal,* pt. 2. (See his *Poetical Works,* v. 1, p. 298-304.)	Houghton, 1896.
Lucas, E. V.	*The Holly.* (See his *Book of Verses for Children,* p. 23-4.)	Holt, 1898.
Lynde, C. A.	*Santa Claus and His Men. St. Nicholas,* v. 2, p. 168	
McCullough, A. W.	*The Christmas Tree Lights. St. Nicholas,* v. 26, p. 112	
Mackay, Charles	*Under the Holly Bough.* (See Bellamy and Goodwin, *Open Sesame,* v. 2, p. 359-60.)	Ginn, 1891.
Milton, John	*Ode on the Morning of Christ's Nativity.* (See Repplier. A., *Book of Famous Verse,* p. 182-191.)	Houghton, 1892.
	Same. (See Warner, C. D., *Library of the World's Best Literature,* v. 25, p. 10048-51.)	International Society, 1897.
Moore, C. C.	*A Visit from St. Nicholas.* (See Norton, C. E., *Heart of Oak Books,* v. 3, p. 142-3.)	Heath, 1898.
Paine, A. B.	*Cupid and Santa Claus. St. Nicholas,* v. 26, p. 253-4	
Perry, N.	*Christmas Day. St. Nicholas,* v. 10, p. 92	
Poulsson, Emilie	*Santa Claus and the Mouse.* See her *In the Child's World,* p. 122-4.)	Milton Bradley, 1898.
Pyle, K.	*December. St. Nicholas,* v. 18, p. 135	
Rice, D. G.	*A New Mother Goose Jingle. St. Nicholas,* v. 24, p. 115	

Riley, J. W.	*Das Krist Kind.* (See his *Afterwhiles,* p. 14-18.)	Scribner, 1898.
Riley, J. W.	*To Santa Claus.* (See his *Afterwhiles,* p. 96-7.)	Scribner, 1898.
Riley, J. W.	*What Chis'mas Fetched the Wigginses.* (See his *Green Fields and Running Brooks,* p. 154-68.)	Scribner, 1898.
S., E. M.	*A Southern Christmas Eve. St. Nicholas,* v. 3, p. 183	
S., J.	*A Santa Claus Messenger Boy. St. Nicholas,* v. 21, p. 184	
S., H. S.	*The Christmas Moon. St. Nicholas,* v. 10, p. 206	
Sanderson, J.	*The Best Tree. St. Nicholas,* v. 24, p. 164-5	
Scott, Walter	*Christmas in the Olden Time.* (See Bellamy and Goodwin, *Open Sesame,* v. 2, p. 360-2.)	Ginn, 1891.
Sears, E. H.	*Christmas Song.* (See Bellamy and Goodwin, *Open Sesame,* v. 3, p. 353-4.)	Ginn, 1892.
Sears, E. H.	*The Glorious Song of Old.* (See Bellamy and Goodwin, *Open Sesame,* v. 2, p. 357-8.)	Ginn, 1891.
Sears, E. H.	*Peace on Earth.* (See Warner, C. D., *Library of the World's Best Literature,* v. 41, p. 16861.)	International Society, 1897.
Sherman, F. D.	*A Real Santa Claus.* (See his *Little Folk Lyrics,* p. 53-4.)	Houghton, 1898.
Southwell, Robert	*New Prince, New Pomp.* (See Bellamy and Goodwin, *Open Sesame,* v. 3, p. 352-3.)	Ginn, 1892.
Spofford, H. P.	*The Yule-Log's Song. St. Nicholas,* v. 17, p. 195-7	
Stein, E.	*The Little Fir-Trees. St. Nicholas,* v. 18, p. 150	
Sterling, H. R.	*A Christmas Eve Thought. St. Nicholas,* v. 23, p. 169	
Stevenson, R. L.	*Christmas at Sea.* (See Warner, C. D., *Library of the World's Best Literature,* v. 41, p. 13942-3.)	International Society, 1897.
Stone, E. A.	*The Pie and the Clock. St. Nicholas,* v. 26, p. 113.	
Tate, Nahum	*Christmas Hymn.* (See Warner, C. D., *Library of the World's Best Literature,* v. 41, p. 16873-4.)	International Society, 1897.
Tennyson, Alfred	*Birth of Christ.* (See Bellamy and Goodwin, *Open Sesame,* v. 3, p. 351.)	Ginn, 1892.
Tennyson, Alfred	*Christmas.* (See Norton, C. E., *Heart of Oak Books,* v. 4, p. 282-3.)	Heath, 1898.
Tennyson, Alfred	*Christmas Bells.* (See Bellamy and Goodwin, *Open Sesame,* v. 3, p. 348-9.)	Ginn, 1892.
Thackeray, W. M.	*The End of the Play.* (See his *Ballads and Miscellanies,* p. 59-61.)	Harper, 1899.
Thackeray, W. M.	*The End of the Play.* (See Bellamy and Goodwin, *Open Sesame,* v. 3, p. 358-61.)	Ginn, 1892.
Thaxter, Celia	*Piccola.* (See her *Stories and Poems for Children,* p. 320-1.)	Houghton, 1899.
	Same. (See Poulsson, Emilie, *In the Child's World,* p. 129-30.)	Milton Bradley, 1898.

Thomas, E. M.	*Ye Merrie Christmas Feast. St. Nicholas,* v. 14, p. 163-5	
Van Blarcom, V.	*Dorothy and the Christ-Child*	Herrick, 1897.
Wells, C.	*Christmas Gifts. St. Nicholas,* v. 26, p. 233	
Wesley, Charles	*Christmas Day.* (See Bellamy and Goodwin, *Open Secame,* v. 2, p. 353-4.)	Ginn, 1891.
Wiltse, S. E.	*A Jewish Legend.* (See her *Kindergarten Stories and Morning Talks,* p. 99-100.)	Ginn, 1894.
Wither, George	*Christmas Carol.* (See Warner, C. D., *Library of the World's Best Literature,* v. 39, p. 16127-8.)	International Society, 1897.
Wordsworth, Wm.	*The Christmas Carol.* (See Bellamy and Goodwin, *Open Sesame,* v. 3, p. 349-51.)	Ginn, 1892.

Stories

Alcott, L. M.	*Sophie's Secret. St. Nicholas,* v. 11, p. 25-29, 114-18.	
Allen, H.	*How a Street Car Came in a Stocking. St. Nicholas,* v. 23, p. 101-7.	
Alling, R. L.	*A Christmas Conspiracy. St. Nicholas,* v. 14, p. 142-5, 211-15.	
Andersen, H. C.	*The Fir Tree.* (See his *Fairy Tales,* p. 130-40.)	Dutton.
Arnstein, F.	*Christmas in the Barn.* (See Poulsson, Emilie, in *The Child's World,* p. 119-22.)	Milton Bradley, 1898.
Bellew, A. T.	*Christmas Stars. St. Nicholas,* v. 13, p. 216-18.	
Bennett, H. H.	*The Christmas Ship. St. Nicholas,* v. 25, p. 126-31.	
Boyesen, H. H.	*Biceps Grimlund's Christmas Vacation. St. Nicholas,* v. 16, p. 122-30.	
Bradley, M. E.	*Cousin Jane's Mistake. St. Nicholas,* v. 25, p. 113-20.	
Burgess, G.	*The Purloined Christmas. St. Nicholas,* v. 25, p. 169-171.	
Burr, F. C.	*A Snow-bound Christmas. St. Nicholas,* v. 24, p. 99-105.	
Butterworth, H.	*My Grandmother's Grandmother's Christmas Candle. St. Nicholas,* v. 13, p. 174-9.	
Coryell, J. R.	*A Scheming Old Santa Claus. St. Nicholas,* v. 14, p. 126-33.	
Crosby, A.	*The Elves' Gift. St. Nicholas,* v. 1, p. 108-11.	
Dickens, Charles	*Christmas Carol.* (See his *Christmas Books,* v. 1, p. 3-110)	Estes.
Douglas, A. M.	*Santa Claus Land*	Lee and Shepard.
Drinkwater, E. A.	*Debby's Christmas. St. Nicholas,* v. 5, p. 223-8.	
Ewell, A. M.	*One Christmas Eve at Master Muffet's. St. Nicholas,* v. 26, p. 238-45.	
Ewing, J. H.	*Christmas Crackers.* (See her *Lob-Lie-by-the-Fire,* p. 292-317.)	Roberts, 1896.
Ewing, J. H.	*Old Father Christmas.* (See her *Lob-Lie-by-the-Fire,* p. 110-26.)	Roberts, 1896.
Ewing, J. H.	*Three Christmas Trees.* (See her *Lob-Lie-by-the-Fire,* p. 266-77.)	Roberts, 1896.
Flint, S.	*Christmas at Number One, Crawlin Place. St. Nicholas,* v. 7, p. 114-16.	

Foot, M. H.	*Menhaden Sketches. Summer at Christmas Time. St. Nicholas,* v. 12, p. 116-24	
Gladden, W.	*A Christmas with the Man in the Moon. St. Nicholas,* v. 8, p. 118-25	
Gladden, W.	*Santa Claus on a Lark. St. Nicholas,* v. 13, p. 96-104	
H. H.	*Christmas in the Pink Boarding House. St. Nicholas,* v. 11, p. 188-200	
Harrison, Elizabeth	*Christmas Time.* (See her *Two Children of the Foothills,* p. 224-49.)	
Henderson, W. J.	*Molly Ryan's Christmas Eve. St. Nicholas,* v. 20, p. 114-19	
Howells, W. D.	*Christmas Every Day.* (See his *Christmas Every Day and Other Stories,* p. 3-22.)	Harper, 1899.
Howells. W. D.	Same. *St. Nicholas,* v. 13, p. 163-7	
Hyde, C. M.	*Holly-berry and Mistletoe. St. Nicholas,* v. 20, p. 90-95, 191-7, 291-5, 356-9	
Jackson, C. F.	*Leon Maturin's Christmas Eve. St. Nicholas,* v. 4, p. 123-7	
Jewett, S. O.	*Betty Leicester's English Christmas. St. Nicholas,* v. 23, p. 108-11, 225-32, 313-18.	
K., M. E.	*The Christmas Fairies. St. Nicholas,* v. 10, p. 82-3.	
Lathrop, R. H.	*Those Christmas Stockings. St. Nicholas,* v. 14, p. 179-84	
Lockwood, M.	*What the Christ-Child Brought. St. Nicholas,* v. 1, p. 141-6	
McVeigh, W.	*An Amateur Kris Kringle. St. Nicholas,* v. 26, p. 116-119.	
Mann, F. E.	*The Bird's Christmas.* (See Poulsson, Emilie, *In the Child's World,* p. 125-8.)	Milton Bradley, 1898.
May, S.	*Santa Claus on Snow Shoes. St. Nicholas,* v. 13, p. 208-11	
Miner, J. W.	*Santa Claus Pathway. St. Nicholas,* v. 22, p. 94-8.	
Mitchell, D. G.	*Christmas Angels. St. Nicholas,* v. 1, p. 105-7.	
Mosby, E. F.	*The Christmas Inn. St. Nicholas,* v. 19, p. 83-7.	
	Our Holiday Party. St. Nicholas, v. 13, p. 138-40.	
Parrish, E. K.	*Jack's Christmas. St. Nicholas,* v. 5, p. 124-8.	
Poulsson, Emilie	*A Christmas Cure. St. Nicholas,* v. 18, p. 159-60.	
Pritchard, S. J.	*The First Christmas Tree. St. Nicholas,* v. 15, p. 130-4.	
Robertson, J. L.	*Little Santa Claus. St. Nicholas,* v. 21, p. 374-5.	
Scannell, F.	*A Christmas Legend. St. Nicholas,* v. 2, p. 141-2.	
Scudder, H. E.	*A Christmas Stocking.* (See his *Seven Little People and their Friends,* p. 57-96.)	Houghton, 1898.
Stockton, F. R.	*Christmas Before Last.* (See his *Bee-Man of Orn,* p. 87-113.)	Scribner, 1887.
Stockton, F. R.	*The Poor Count's Christmas. St. Nicholas,* v. 9, p. 122-7, 189-93	

Stuart, R. M.	*An Old-time Christmas Gift. St. Nicholas,* v. 25, p. 84-103.	
Thompson, K. V.	*Kitty's Christmas Stocking. St. Nicholas,* v. 20, p. 387-91.	
Thorne, O.	*Doings of the "Polly's Christmas Society." St. Nicholas,* v. 4, p. 109-11	
Thorne, O.	*May's Christmas Tree. St. Nicholas,* v. 2, p. 179-82.	
White, L. L.	*Bobby's Christmas Dream. St. Nicholas,* v. 18, p. 387-9.	
Wiggin, K. D.	*Bird's Christmas Carol*	Houghton, 1899.
Wilkins, M. E.	*Where the Christmas Tree Grew. St. Nicholas,* v. 15, p. 205-9.	
Wilson, W. A.	*A Christmas White Elephant. St. Nicholas,* v. 23, p. 112-19, 184-7.	
Wiltse, S. E.	*The First Christmas Presents.* (See her *Kindergarten Stories and Morning Talks,* p. 103-4.)	Ginn, 1894
Wiltse, S. E.	*Saint Christopher.* (See her *Kindergarten Stories and Morning Talks,* p. 100-2.)	Ginn, 1894
Wiltse, S. E.	*Saint Elizabeth and the Sick Child.* (See her *Kindergarten Stories and Morning Talks,* p. 97-8.)	Ginn, 1894
Woodbury, J. H.	*Christmas in the Arctic Regions. St. Nicholas,* v. 3, p. 157-60.	

Christmas Gifts

Sargent, E. S.	*Children's Christmas Club. St. Nicholas,* v. 11, p. 174-8.
Welch, E. S.	*Home-made Christmas Gifts. St. Nicholas,* v. 13, p. 61-8.
Worstell, M. V.	*The Month Before Christmas. St. Nicholas,* v. 17, p. 89-91.

Plays

Brooks, E. S.	*The Fake Sir Santa Claus. St. Nicholas,* v. 10, p. 65-72.
Murdock, C. A.	*A 16th Century Christmas. St. Nicholas,* v. 16, p. 145-9.

General Reference List

Art and Industry

Beard, L. and Beard, A. B.	*American Girls' Handy Book*	Scribner.
Bigelow	*Useful Arts*	Harper.
Birch	*Ancient Pottery*	Murray.
Chase and Clow	*Stories of Industry*	Educ. Pub. Co.
Chipiez and Perrot	*History of Ancient Egyptian Art*	Armstrong.
Fergusson.	*History of Architecture*	Dodd & Mead.
Fergusson.	*History of Indian and East Indian Architecture*	Dodd.

Hale.	*Stories of Invention*	Little and B.
Kirby, M. and Kirby, E.	*Aunt Martha's Corner Cupboard*	Flanagan.
Knight.	*Mechanical Dictionary*	Houghton.
Marsden.	*Cotton Spinning*	Bell.
Mason.	*Origins of Invention*	Scott.
Parton.	*Captains of Industry*	Houghton.
Reber.	*History of Ancient Art*	Harper.

Domestic Science

Church.	*Food.*	Chapman and H.
Tracy.	*Handbook of Sanitary Information*	Appleton.
Uffelmann.	*Domestic Hygiene of the Child*	Putnam.

Geography, Geology, and Travel

Boner.	*Transylvania.*	Longmans.
Brown.	*Countries of the World*	Cassell.
Calderon de la Barca	*Life in Mexico*	Chapman.
Carpenter.	*Asia.*	Am. Book Co.
Carpenter.	*Geographical Readers*	Am. Book Co.
Carpenter.	*North America*	Am. Book Co.
Dana.	*Manual of Geology*	Am. Book Co.
Davis.	*Physical Geography*	Ginn.
Edwards.	*Thousand Miles Up the Nile*	Routledge.
Geikie.	*Physical Geography*	Appleton.
Geikie.	*Text Book of Geology*	Macmillan.
Guyot.	*Earth and Man*	Scribner.
Herrick.	*The Earth in Past Ages*	Harper.
Hutchinson.	*Story of the Hills*	Macmillan.
Huxley.	*Physiography.*	Appleton.
King.	*Picturesque Geographical Readers*	Lee.
Le Conte.	*Compend of Geology*	Appleton.
Lloyd.	*Peasant Life in Sweden*	Tinsley.
Longmans.	*School Geography*	Longmans.
Macturk.	*Physical Geography*	Putnam.
Mahaffy.	*Old Greek Life*	Appleton.
Mill.	*Realm of Nature*	Scribner.
Musick.	*Hawaii: Our New Possessions*	Funk & W.
Meldrum.	*Holland and the Hollanders*	Dodd.
Nansen.	*First Crossing of Greenland*	Longmans.
O'Rell.	*John Bull and His Island*	Scribner.
Penfield.	*Present Day Egypt*	Century Co.
	Pronouncing Gazetteer of the World	Lippincott.
Reclus.	*Asia.*	Appleton.
Reclus.	*Bird's-Eye View of the World*	
Reclus.	*Earth.*	Harper.
Russell.	*Rivers of North America*	Putnam.
Scott.	*Introduction to Geology*	Macmillan.
Shaler.	*First Book in Geology*	Ginn.
Smith.	*Dictionary of Greek and Roman Geography*	Murray.
Tarr.	*Physical Geography*	Macmillan.
Whitling.	*Pictures of Nuremburg*	Bentley.
Williams.	*Middle Kingdom*	Scribner.

History and Biography

Andreas.	*History of Chicago*	Andreas.
Appian.	*Roman History*	Macmillan.
Arnold.	*History of Rome*	Appleton.
Baldwin.	*Old Greek Stories*	Am. Book Co.
Beesly.	*Gracchi, Marius and Sulla*	Scribner.
Blanchard.	*Northwest and Chicago*	Blanchard.
Cameron.	*Egypt in the Nineteenth Century*	Smith and E.
Capes.	*Roman Empire of the Second Century*	Scribner.
Capes.	*Roman History: Early Empire*	Scribner.
Church.	*Pictures from Greek Life and Story*	Putnam.
Coulanges.	*Ancient City*	Small.
Creighton.	*Rome.*	Appleton.
Curtius.	*Greece.*	Scribner.
Davidson.	*Cicero and the Fall of the Roman Republic*	Putnam.
Doyle.	*English Colonies in America*	Holt.
Duncker.	*History of Antiquity*	Bentley.
Duruy.	*History of Rome*	Estes.
Earle.	*Home Life in Colonial Days*	Macmillan.
Ebers.	*Egypt.*	Cassell.
Edwards.	*Pharaohs, Fellahs and Explorers*	Harper.
Fisher.	*Outlines of Universal History*	Ivison.
Fowler.	*Julius Cæsar and the Foundation of the Roman Imperial System*	Putnam.
Froude.	*Cæsar.*	Scribner.
Gilman.	*Story of the Nations: Rome*	Putnam.
Grote.	*History of Greece*	Alden.
Guerber.	*Captain John Smith*	Maynard.
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Nichols.	*Roman Forum*	Longmans.
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Pennell.	*Rome from the Earliest Times to 476 A. D.*	Allyn.
Preston and Dodge.	*Private Life of the Romans*	Leach.
Sheldon.	*General History*	Heath.
Smith.	*Ancient History of the East*	Harper.
Smith.	*Dictionary of Greek and Roman Antiquities*	Murray.
Smith.	*Dictionary of Greek and Roman Biography*	Murray.
Starr.	*Some First Steps in Human Progress*	Winona Pub. Co.
Taylor..	*The Origin of the Aryans*	Scott.
Thalheimer.	*Manual of Ancient History*	
Tyler.	*Anthropology.*	Appleton.
Tyler.	*Early History of Mankind*	Holt.
Tyler.	*Primitive Culture*	Holt.
Viollet-le-buc.	*Habitation of Man*	Sampson.
Von Falke.	*Greece and Rome*	Holt.
Wilkinson.	*Ancient Egyptians*	Dodd & Mead.
Wordsworth.	*Greece.*	Orr.

Literature

Ambrosi.	*Italian Child Life*	Lothrop.
Andersen.	*Fairy Tales*	Dutton.
Bellamy and Goodwin.	*Open Sesame*	Ginn.
Bulwer.	*Last Days of Pompeii*	Little, B.
Burnett.	*Giovanni.*	Scribner.
Campbell.	*Religion in Greek Literature*	Longmans.
Cyr.	*Fourth Reader*	Ginn.
Dickens.	*Christmas Books*	Estes.
Dickens.	*No Thoroughfare*	Estes.
Dodge.	*Rhymes and Jingles*	Scribner.
Douglas.	*Santa Claus Land*	Lee and S.
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Field.	*With Trumpet and Drum*	Scribner.
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Sherman.	*Little Folk Lyrics*	Houghton.
Stockton.	*Bee-Man of Orn*	Scribner.
Tennyson.	*Boadicea.*	Houghton.
Thackeray.	*Ballads and Miscellanies*	Harper.
Thackeray.	*Denis Duval*	Harper.
Thaxter.	*Stories and Poems for Children*	Houghton.
Van Blarcom	*Dorothy and the Christ-Child*	Herrick.
Wallace.	*Ben Hur*	Harper.
Warner.	*Library of the World's Best Literature*	International Society.
Wiggin.	*Bird's Christmas Carol*	Houghton.
Wiggin and Smith	*Story Hour*	Houghton.

Physiology and Physical Training

Blaikie.	*How to Get Strong and How to Stay So*	Harper.
Strutt.	*Sports and Pastimes of the People of England*	Chatto.
Sutton.	*Evolution and Disease*	Scribner.

Psychology and Pedagogy

Ellis.	*Criminal.*	Scribner.
Galton.	*Hereditary Genius*	Macmillan.
Galton.	*Natural Inheritance*	Macmillan.
Guyau.	*Education and Heredity*	Scott.
Ireland.	*Mental Affections of Children*	Churchill.
Jackman.	*Nature Study for Grammar Grades*	Macmillan.
Mahaffy.	*Old Greek Education*	Harper.
Oppenheim.	*Development of the Child*	Macmillan.
Poulsson.	*In the Child's World*	Bradley.
Warner	*Growth and Means of Training the Mental Faculty.*	Macmillan.
Warner.	*Study of Children*	Macmillan.
Wiltse..	*Kindergarten Stories and Morning Talks*	Ginn.

Science

Archibald.	*Story of the Earth's Atmosphere*	Appleton.
Bert.	*First Steps in Scientific Knowledge*	Lippincott.
Carhart and Chute	*Elements of Physics*	Allyn.
Carhart.	*University Physics*	Allyn.
Chute.	*Physical Laboratory Manual*	Heath.
Crew.	*Elements of Physics*	Macmillan.
Davis.	*Elementary Meteorology*	Ginn.
Dolbear.	*Art of Projecting*	Lee.
Ferrell.	*Popular Treatise on the Winds*	Wiley.
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Harrington.	*Physics for Grammar Schools*	Am. Book Co.
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Hepworth.	*Book of the Lantern*	Wilson.

Hopkins.	*Experimental Science*	Munn.
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Lommel.	*Nature of Light*	Appleton.
Mayer and Barnard	*Light.*	Appleton.
Preston.	*Theory of Light.*	Macmillan.
Stewart and Gee	*Elementary Practical Physics*	Macmillan.
Troeger.	*Harold's Rambles*	Appleton.
Tyndall.	*On Light*	Appleton.
Waldo.	*Elementary Meteorology*	Am. Book Co.
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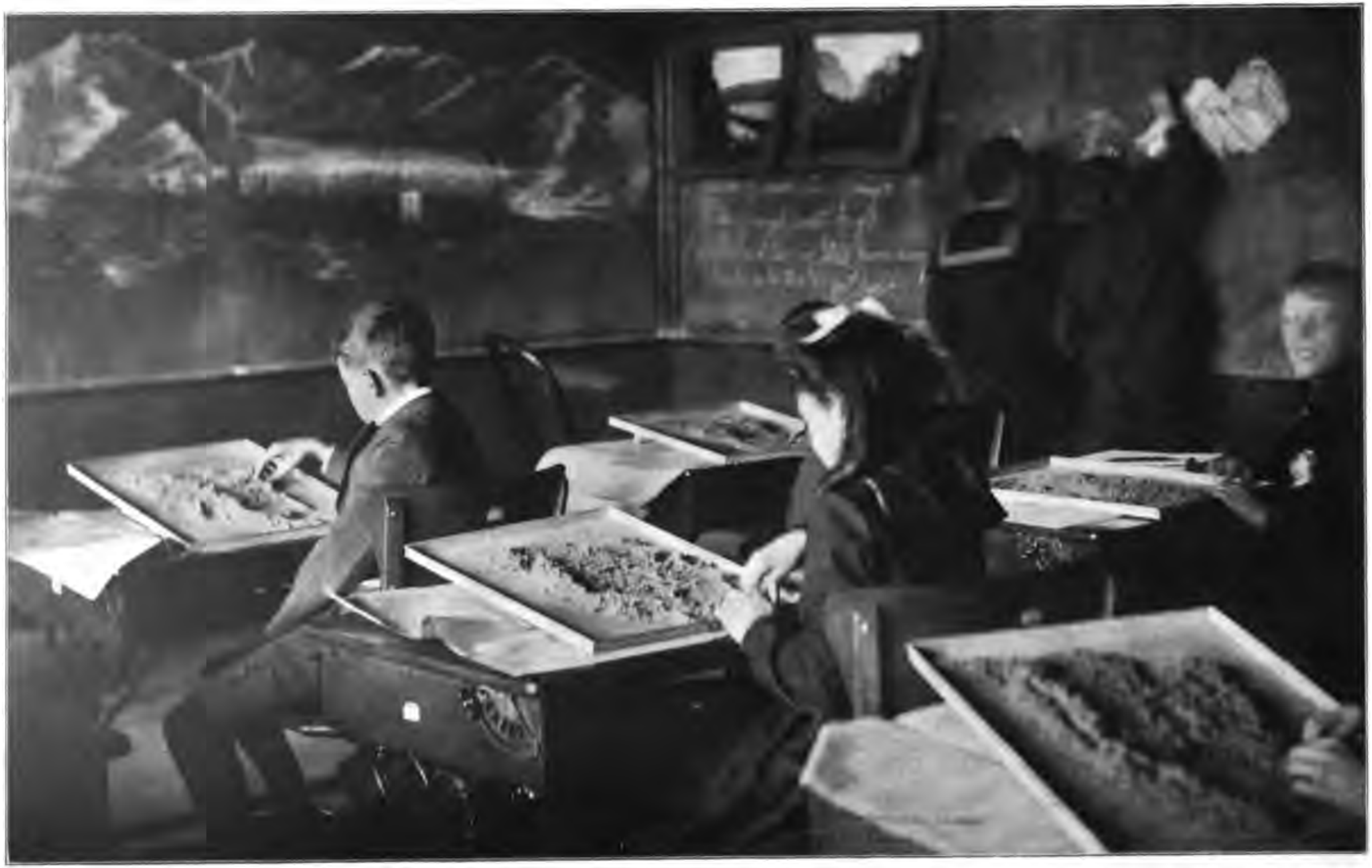

EXPRESSION IN GEOGRAPHY
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THE COURSE OF STUDY

A PUBLICATION FOR TEACHERS AND PARENTS
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Pedagogics of Nature Study

Wilbur S. Jackman

Imaging

When an object or a physical phenomenon is presented to one or more of the senses, an effect is produced that in no conceivable manner can be said to resemble the cause. The phenomenon of vibration derived from a blow by a hammer striking some object may be traced along purely material channels, and its rate of movement is but a problem in mathematical physics. At a given point, however, its physical identity is lost, and in its stead there flashes out a mental phenomenon which remains. Assuming the integrity of the senses, each normal individual must bear witness to the constant correspondence between the physical presentation and the psychic result which is called an image. It is not properly an image, though, if there is associated with this word its ordinary meaning. An image is a likeness or a counterpart. The mental image is not a *likeness*, but a result which is remarkable in its *unlikeness* to the cause. In the process of living, during the conscious hours there is a continual effort, first, to interpret these psychic results; that is, to refer them to the proper material source; and second, to organize them—that is, to discover by what relations they are associated. These operations are to the end that one may obtain his bearings and preserve his proper place in the scheme of creation. The process of education is the systematized attempt to economize this effort. It accomplishes its purpose only as it keeps unobstructed the pathway between the physical and the psychic phenomena, and so far as it discovers methods of interpretation and organization that can be applied under the proper motive in dealing with psychic results or images.

Mental images, although bearing no resemblance to each other, may be considered as related when they can be referred to the same external source. The sound of the hammer striking a nail, the appearance of its falling through the air, the sinking of the nail into the wood, all give rise to images that it is impossible to compare with each other. Yet they are related, since they are referred to a common cause. When the psychic results of the sight giving color, and of the sight giving the effect of the blow upon the nail, and of the sound giving the substance are interpreted as belonging to the same thing, the hammer, they become organized at once as the related parts of the image of the hammer, which has a certain form, weight, and substance. Psychic results may be produced from outside occurrences which follow in immediate sequence in time, or which may take place simultaneously, yet this time relationship, alone, will not admit of their being organized into an image in the educative sense. As the hammer falls, a bird may fly across the field of vision; but the psychic result of the latter bears no educative relation to those derived from the hammer.

In nature study, the landscape, embodying the entire field of observation, presents itself to the beginner as a great composite of confused parts, and to most people, perhaps, it always remains so. It should be the aim of instruction to assist the pupil to refer the separate and more or less confused mental impressions to the appropriate source, and as this is done, to organize those referred to the same source into a clear and definite image. The landscape is revealed to the observer through its color, the initial interest being roused through the æsthetic sense. Everything, therefore, which involves color can be referred to a common external source, namely, light. All color impressions consequently become organized in the mind, since they are related to a common cause. Whether it is the foliage of a tree or the decorative colors of a room, the questions arising in both are solved by this relation to the one thing, light. Still further, in plants many of the myriad varieties in form are nothing but inextricable confusion until their relationship to light is recognized; then the seeming confusion of forms becomes an orderly array. Even two structures so extreme in their unlikeness to each other as a leaf and the human eye become related, from the fact that each represents a concession of the organism to the same controlling cause found in light. A large number of landscape phenomena, therefore, may be grouped together, from which there will be formed an image of related parts representing the effects of light. Another group of phenomena will be referred in the same way to heat, another to moisture, another to soil, and so on. The channeling of the grassblade and the bladdery vesicles on submerged plants as isolated facts are of little importance. But when the one is recognized as a dew-spout and the other as a swim-bladder, and that both are an attempt to make friends with water, they become the organized parts of an image that is fundamental in the study of botany. Imaging thus begun opens the way to endless study. Simple enough in the outset to be clear to the child, the last step in scientific research is but the latest attempt of the trained mind to define more clearly the same image. Nature study is not only the amassing of facts, it is also the organization of facts; science itself is nothing more. This kind of image growth is continuous. The demand for details for an ever incompleted image impels that research which always marks the true student of nature.

Function of Expression in Education

Francis W. Parker

SYLLABUS FOR FACULTY DISCUSSION

I. The best expression requires the best thought. The best thought causes the best growth of the nerve centers. Expression is controlled by motive; the higher the motive the greater the demand for expression and thought power.

1. The phrases, "the best expression," "the best thought," may seem vague and indeterminate, but certainly every teacher should demand of pupils and should direct all teaching skill to bring about nothing less than that. It is perfectly safe to say that all the movement in the development

of the child's mind should be in the best possible direction — that is, in the most economical direction.

a. The best expression is that which is clearest, most legible, and most intelligible to the minds of those addressed.

b. It comes the nearest to the realization of its end and aim.

c. The best, most complete action of body, mind, and soul is the most economical movement in realizing an ideal.

2. The best expression demands the clearest, most distinct, most concise thought.

a. Carelessness in expression is generally due to carelessness in thought.

b. The form of expression may have many imperfections, and still if it is commensurate with the ability of the child it may be called the best.

II. The highest exercise of the body, the development of the brain by self-activity, the growth of thought power, and the cultivation of motive depend upon expression in all its modes.

1. The proof of this fact, of such tremendous importance in education, is found in the law of "motor discharge" (Dewey); in "dynamo genesis" (Baldwin); in "man a reactive animal" (James).

a. Sensations are held in nerve centers *for growth* by automatic discharge.

b. Holding a sensation or group of sensations is accomplished by motor discharge.

c. When an image becomes strong enough for conscious discharge through the agents of expression (voice, hand, body), the will controls and directs the movements.

d. Holding an image causes that image to grow by expansion and concentration.

Note: Images form the essential mental basis of analysis, judgment, inference, reason, laws of causation, and abstraction.

There is an unconscious, or automatic, tendency of all thought to manifest itself. All sensations, under the law of motor discharge, react or move out through the efferent nerve tracts. The result of this partial motor discharge is an emotion which accompanies all study without realizing the thought in expression. When thought is expressed by any of the modes, self-criticism often becomes painful by the recognition of the fact that the expression is inadequate to the thought.

III. Attention is the holding of images for growth by the aid and stimulus of external objects. If held, images must grow. When they cease to grow it is impossible to hold them.

1. There are three modes of attention:

a. Observation—the direct action of an object upon consciousness for the purpose of acquiring an image corresponding to the object.

b. Hearing language—imaging under the stimulus of oral sentences, reinforced by emphasis, including harmony and gesture.

c. Reading (in all languages)—imaging under the stimulus of printed sentences.

To this list may be added reflection, which is imaging without the direct action or stimulus of external objects.

Note: Observation of pictures, maps, sculpture, may be counted as a mode of attention. The picture contains certain related attributes of the object represented.

IV. Modes of expression. Through the vocal organs—voice, speech, vocal music. Through the whole body—gesture. Through the hand—making, modeling, painting, drawing, and writing.

1. Attention demands expression:

a. For the steady holding of images.

b. For self-criticism in the realization of images. (In no other way can the need of clearness, distinctness, and relation be made apparent to the student.)

2. Memory demands expression. (Strong related images are the basis of recollection.)

V. Subjects for mind nutrition or growth.

Explanation: In the mere forms of attention and expression there is no substantial image growth. There is a vast difference between the means of growth and the growth itself.

1. Nutritious subjects are comprehended in Nature and Man. The study of Geography (or Physiography) is the imaging of the earth's surface. Geology is the history of the earth's surface. Mineralogy is the composition of the earth's crust. Meteorology is the study of heat, its source, cause, distribution; the study of air and its distribution by winds; the study of moisture and its distribution.

2. The function of moisture (water) and air in changing the earth's surface.

a. The function of moisture in relation to living organisms—plants, animals, man.

3. Plant life (Botany), its relations to Geography, Geology, Mineralogy, and Meteorology.

a. The function of plant life in relation to animals and man.

4. Zoölogy (animal life) and its relations to plant life, to its environments.

a. Its function in the support of man's life.

5. Man.

a. Environment: Geography, Geology, Mineralogy, Meteorology, Botany, and Zoölogy.

b. Anthropology: Anatomy, Physiology, Evolution, Psychology, Ethnology (sociology); influence of society upon man.

6. Archæology: the ancient work—arts and crafts of man—buildings, tools, implements, etc.

7. Philology.

a. The languages in relation to the thought and evolution of man.

b. Written history the record of man's life.

c. All changes in organic matter are under the laws of Physics and Chemistry. All study may be called study of change. There are the changes physical and chemical, and the changes in life under laws that have not been discovered. Thus there can be no understanding of organic or inorganic matter without the study of Physics and Chemistry.

NOTE.—It will be seen that all these subjects are really *one*. It is impossible to understand one subject without the other subjects. The growth of images corresponding to objects, subjects in Nature and Man, is fundamental and essential knowledge.

The strength of all images consists in their accurate correspondence and relations. Strong memory means strong related images.

Questions for Discussion

If the foregoing is reasonably true, then the following questions may be discussed:

1. Is expression absolutely essential to the growth of mind, body, and soul?

2. Has each mode of expression a definite, reactive, educative function for which no other mode or all the modes can be substituted?

3. In the use of all modes of expression is there a definite relation to the growth of the being?

4. What is the function of each mode of expression?

5. Should each mode and all the modes of expression be used continuously in teaching?

6. If one mode is omitted, will there be a lack of education?

7. How are teachers to determine the modes of expression to be used in given cases?

8. Is it true that all teaching should have for a purpose the growth of an image or apperceptive mass?

NOTE.—A common and fatal error in teaching is the fancy that students have certain images when they do not have them. Images in children, and indeed in most persons, are vague and anything but strong. The teachers fancy that children have the thoughts that they (the teachers) have, and therefore vainly strive to accomplish the impossible.

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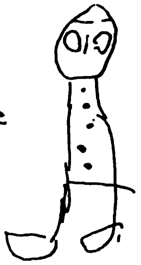

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A Few Suggestions on the Teaching of Art

John Duncan

No error in the teaching of drawing has been so malign as the imposition upon the child of ideas and methods beyond his stage of culture.

Our systems of drawing have come to the common schools from the studios, and though they have a place and function there, they have proved worse than ineffective with the little ones. The method proper for the advanced student will not do for the beginner. There is in the art schools an immense insistence upon technique, but the children must have free swing. Even in the studios this has been carried too far; the art of our time is too much a thing of mere technical accomplishment. Is not the life more than meat, and the body than raiment? Instead of forcing our adult art and our ways of regarding things upon the children, we had better make a serious attempt to understand theirs, and to help them to realize themselves.

In looking over the drawings done in the schools, one is surprised to find how small a part the human figure plays, although man is surely the most interesting object to man.

In our theorizings we speak of man and nature, but in our practice things are reversed and nature takes the precedence. The art of our picture galleries is principally devoted to landscape, effects of light and air and perspective. It may be that human kind and animals would have a larger place in the art of the child if he had a freer choice in the matter.

This is practically recognized in the picture books that we give to children, and if they are compared with the class of work cultivated in school, the difference in vitality is apparent enough. The art of the picture book is vivid and spirited, it is crowded with interest and incident; school-room art is dull and lifeless. It is true picture books are not all that they should be. They are often frivolous, if not actually vicious. But the point is, they have life in them; and the school-room art, though morally irreproachable, is dead, like the horse that had every virtue and only that one fault.

The drawings that children make for their own delectation have always meaning and movement. "This little girl is crying because she is going to school without

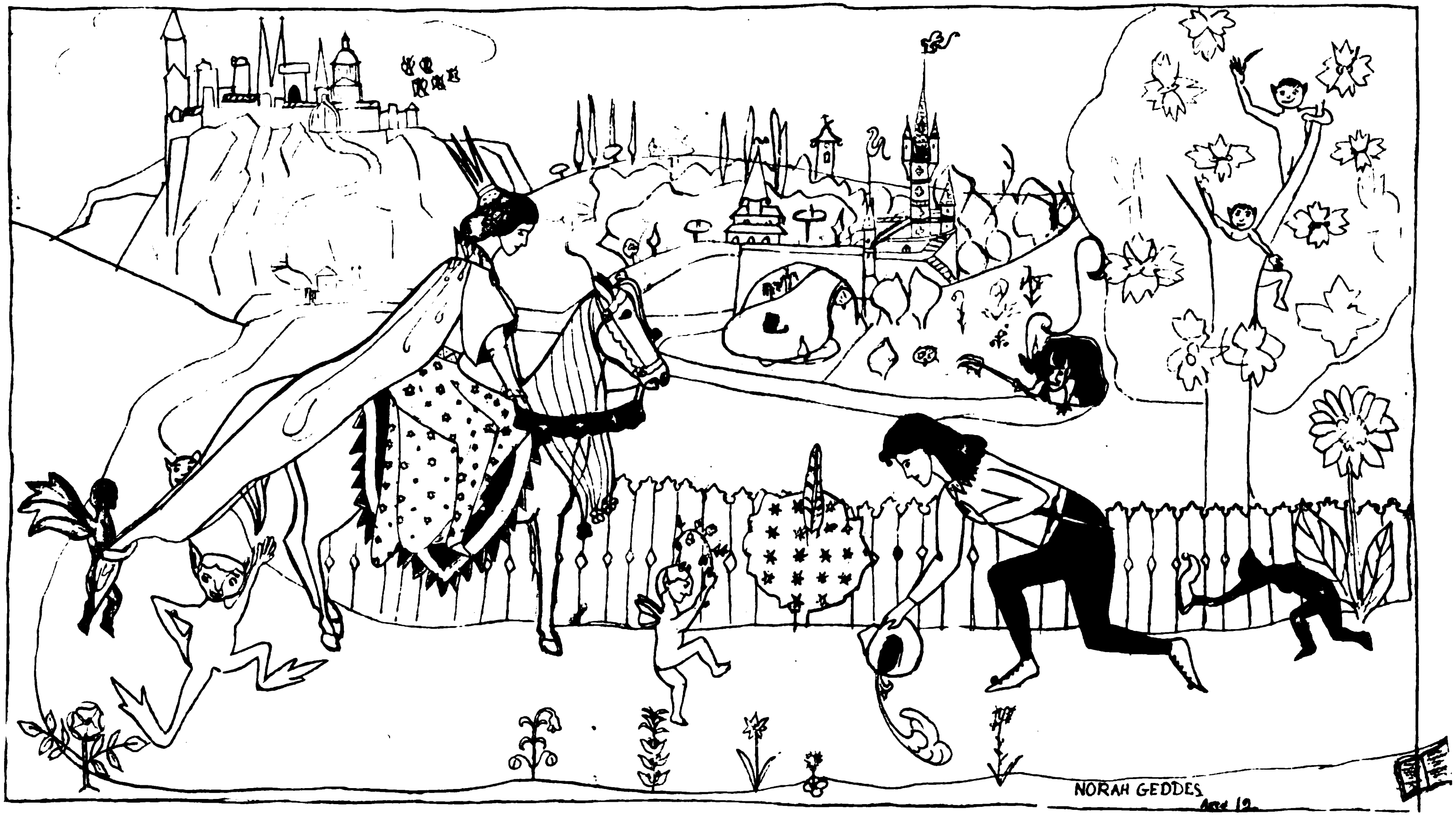
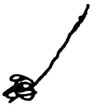


ILLUSTRATION OF THOMAS THE RHYMER
Drawn by a child of twelve. See page 404



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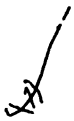

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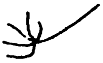

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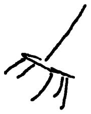

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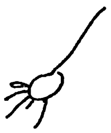

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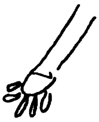

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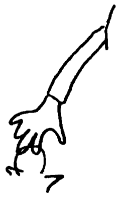

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having learnt her lessons," said a wee lass to me, indicating her drawing.

I remember when I was a boy with what infinite delight I used to watch a fellow-pupil in our school in far-off Scotland draw on his slate unending conflicts between Highlanders and Sassenachs (Saxons; i.e., English). As the men were slain they were wiped off the slate, and redrawn stretched upon the ground. So we overleapt the bounds of pictorial art and invaded the dramatic.

This vital speaking art that the child brings with him when he comes to school is not appraised at its true worth by the teacher, who disdains its rudeness, and fails to read into it all that the child himself sees. The little chap whose imagination is seething with shapes of joy and terror is asked to focus his attention upon things that have for him no charm or significance.

The teacher is impatient with the crudity of his drawing, and cannot wait for the slow and orderly growth of his images of form and color; too often, indeed, she neither knows nor cares if there be any natural order of development; and in forcing him she blunts the freshness of his joy in expression, if she does not kill the art instinct in him altogether.

Let us look at a few drawings done spontaneously by children and see what we can make of them.

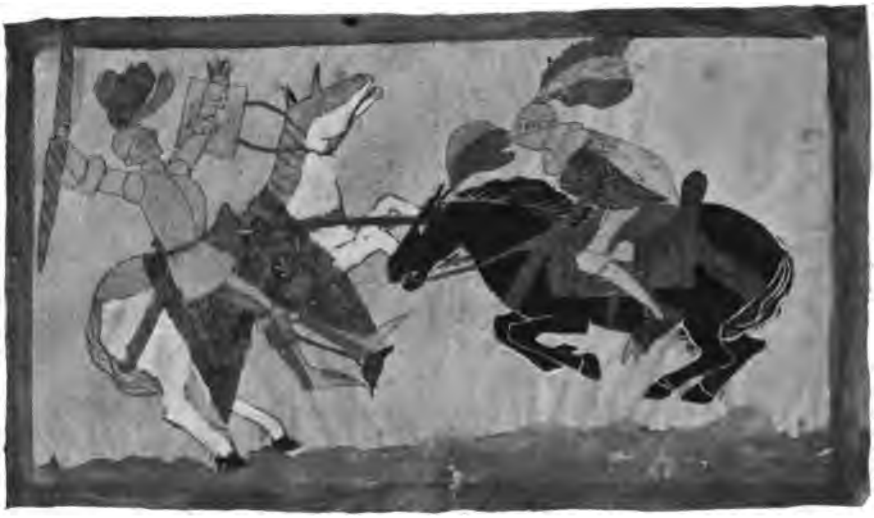
The drawings shown in the accompanying cuts (numbers 1 and 2) are the work of very little persons of kindergarten age, and must be regarded with some indulgence.

You will observe that the child states simply a few facts about the form. Beginning with an almost pure symbol, he adds fact after fact until something of the real appearance of the form begins to come out. There is of course no stereotyped order in the growth; one artist seizes upon one feature and gets to some clearness upon that, and another another. But an examination of these drawings would seem to offer some suggestions toward an ideal order—the mean between individual extremes.

The face is the most arresting and interesting part, and may develop earlier than the other parts. In Fig. 1 we see the head supported on two limbs—the main fact about a man stated viz., that he has a head and carries it around on something. The body is not so important as the arms and legs, which have a more obvious function. The nose is very successfully dealt with in Figs. 1 and 2, its projection in the first and its volume in the second.

Fig. 3 is rather anomalous, wanting arms altogether. He owes his position to his possession of a body, though that is got by a short cut, rather illegitimately, by merely drawing a line from leg to leg and by the addition of a row of buttons—a little technical trick.

The body is first clearly expressed in Fig. 4. The waist and neck and head are added in Fig. 5, which also exhibits very successfully the features as seen in profile. Fig. 6 has his hat well planted on his head, and hiding the top of it as it would in nature, instead of being added above the fully exposed head as in the other cases given. The hand is a triumph; one might



almost suspect that the little artist was somewhat vain of his skill in doing hands, they are brought out so prominently.

In another plate a few drawings of the hand are arranged in a series. In the first figure, the position alone of the hand is suggested. In the second, the fingers are added, simply by drawing three lines across the line representing the arm. In the third, the radiation of the fingers from the wrist is expressed. In the fourth, the student seems to feel dimly that something intervenes between fingers and wrist, and in Fig. 5 this something, the mass of the hand, the palm, is drawn with an appreciation of its shape. In the sixth, the fingers are represented, not by mere lines, but by contour of their mass—a very important step; and in the seventh the fingers are apprehended as continuations of the mass of the hand instead of appendages tacked on to it.

This process may be continued till the thumb is differentiated from the other fingers and the fingers from each other, by an ever subtler appreciation of their varying shapes, proportions, and movements.

On pages 402 and 404 we give two pictures by older children, of eight and twelve years, respectively. One represents two mediæval knights tilting at each other. The artist's interest in knights and armor was awakened in the Paris Exposition by a statue of St. George and the Dragon by Fremiet. He tried to draw it from memory, but found that his ideas were a little vague, and went back and back to the statue, looking at it from every point of view. From this he launched out into original composition, and in the Musée Cluny and the Petit Palais he worked up the details of the armor. In the street he observed the horses carefully, looking for the typical war-horse at every cab-stand.

The other picture illustrates the ballad of *Thomas the Rhymer*. The tale is a Scottish version of the Tannhäuser story. True Thomas, a court poet, is beguiled by the Queen of Faery and carried off to her palace, returning only after the lapse of many long years, when his hair has turned gray and all his friends have given him up for dead.

The road is seen winding away into the distance. The steep and narrow way to heaven is shown, and the broad and easy path that leadeth to destruction. The fiend waits for his prey at the mouth of the pit. Between the citadel of heaven and the cave of darkness lies the happy valley of Faeryland, with its flowery woods and its fantastic castle. The picture represents the first meeting of the minstrel and the queen.

Textiles

Clara Isabel Mitchell

Weaving: Apparatus for teaching the beginning of weaving and foundation weaves may be so simple in construction that it can be made by children six and seven years old. Mats and holders have been woven by children of the First Grade on blocks of ½-inch pine wood 6x12 inches, with a row of small nails driven at intervals of a quarter-inch entirely around the face of the board, a quarter-inch from the edge. This size was chosen as a convenient one for making the articles needed, but boards of other dimensions might be more practical for other purposes. The weaving on such an apparatus is really darning, and is done with a darning or packing needle. The material used is a heavy carpet yarn or cotton roving, chosen for its coarseness, because results are better with the coarse material, also because it is not so taxing to the child. The warp threads may be of one color and the filling of another; or the warp may be striped and the filling put in correspondingly to form checks. The warp—one continuous thread—is stretched up and down the length of the board around each of the nails at the ends. The filling may be put in as in darning, over one warp thread and under the next, alternately, making what is known as the plain weave. If this is varied by drawing one filling thread under two or more warp threads and breaking the order of the plain weave, we can teach twill, satin, and basket weaves. When the strip 6 x 12 inches is finished, it can be slipped off the loom, doubled, sewed or laced together, and will be useful as a holder for the poker, tongs, or tea-kettle.

A little loom which has been found useful, and which illustrates the principles of weaving, is made in the form of a rectangular frame, with an upright fastened in each corner, and poles or little beams extending across the ends of the loom between each pair of uprights, which have been bored through with holes large enough for holding the poles. Warp threads are tied to the poles and stretched tightly by rolling the poles. After tying an end to one of the poles or rollers, the thread should be drawn through a heddle before tying to the other roller. The heddle or harness may be made in various ways. It may be of cardboard cut with slits alternating with holes so arranged as to hold one set of warp threads, while another set is lowered or raised. A different harness may be made by a system of threads tied to a heddle frame, loops so alternating with free spaces that the warp threads are held as in the harness just described. The most primitive harness is illustrated in pictures of the Indian, Mexican, and oriental looms, simple in construction but slow in operation. Shuttles or bobbins may be made of pasteboard or of wood, and should be as long as can be conveniently held, and used in the selected warp. Packing needles may be substituted when the shuttles seem cumbersome and awkward, and often the weaving is best done with the fingers alone.

The looms and harness last described may be made any size desired, practical experience having proved the usefulness of several sizes, varying from 12 x 6 inches to 24 x 36 inches. On these have been made small rugs, mats, strips for ornamenting curtains, and bags. Larger rugs or curtains can be made by sewing or lacing together strips or blocks woven on these small looms.

With even the youngest children, and in the beginning of weaving, it seems wise to attempt something of design, not only for the educational value of pattern-making, but also because of the interest added to the work. Patterns based on the square and triangle are the only ones which can be successfully carried out under the limitations of material and process, and these grow into fineness and complexity with close arrangement of warp threads; warp threads placed closely together, giving greater opportunity for fine variation of forms in the pattern. The detail of oriental geometric designs may be taken as suggestive; the patterns made by the North American Indians, especially those in the Navajo blankets, are best of all.

Of the different ways of weaving in patterns, perhaps the safest to recommend is that of weaving straight across the warp in whatever colors are indicated by the pattern which is being followed, using a different needle or shuttle for each separate patch of color. Another way is to weave in the special figures separately and leave them unconnected at the sides, as in the kelim weaves. Great care will be necessary to keep a piece of work straight, with edges even and parallel. A help to this is the habit of keeping the filling thread loose; another, a thick cord at either edge of the warp to act as listing. A final recommendation in this work is that all weaving be of articles for which there is a use—one recognized by the children and felt by them to be genuine.

NOTE: The carpet yarns having proved to be the most satisfactory material used in children's weaving, the Institute has been able to secure some from the factories. As manufacturers will not sell small quantities, the Institute has on sale in the Book Room a limited quantity of the yarns which can be bought by teachers who wish to buy in small lots. It should be ordered by sample, at 50 cents per pound.

Constructive Work in History

Emily J. Rice

In selecting the material for work in history, we must consider certain prominent interests at the different periods of growth which need their own expression in action. The phases of the past which show these interests expressed most simply and completely are best adapted for study. For instance, the dawning interest in citizenship in the higher grades may be expressed in the attempt to regulate the affairs of the school-room in accordance with the types of government seen at work in political life. The difficulties experienced by the children in attempts at self-government may be then shown, as those met by people of the past and overcome in various ways with various results. These difficulties thus appear as problems, and the child's own powers are at work in their solution.

This is a type of the work that is valuable in history. The end in view is the realization of the present through a knowledge of the past. Here the constructive work is the dramatic expression of the forms of government worked out by the children and any mechanical work or art which helps to give vivid images of the period studied. The historic time to select for the illustration is generally the one in which an institution arose, for, in the necessity for the institution, the problem shows to the best advantage. The children who study carefully the critical period of our history, with its evident tendencies toward anarchy unless a balance were found in some centralizing force, ought to carry away from the study an understanding of the necessity for yielding individual preferences to the general good and a new respect for the rights of others. At least we may hope to do more by presenting the problem in this indirect way than we could by discussion of the relation between a central authority and individuals as an abstract thing.

Mere intellectual appreciation is not enough. The results of this appreciation must be carried into action by the children themselves in order to develop character. The test of the work is the insight the children show into the value of the laws of the school-room and those of the governments they see around them in the city and country, and their more harmonious adjustment to these laws.

The same principle of selection should cause much of the work in the lower grades to be along industrial lines. As the little children are especially interested in the activities of the home and neighborhood, the work in history should extend these activities and illustrate them by the methods and inventions of the race in the same directions. The people to study here are the ones who made the particular inventions in which the children are interested. The constructive work is the putting into form, by handicraft, of the ideas developed in solving problems suggested for present needs or for the needs of the past.

In selecting for the younger children people to study whose inventions were in a crude state, whose work was done in primitive ways, whose social life was simple, whose art expressed love of brilliant color, whose literature set forth a few foundation principles of ethics, we may give a contrast with their own lives that will show the progress of the race and have material for handwork, which will be the result of the child's own invention. The questions presented should be those of the simple industrial arts—how people have gained their food and clothing, how they have provided themselves with houses, tools, and implements, and how they have gradually improved these things, through the pressure of necessity and changes of environment. These questions the children should answer for themselves, and what they make as handwork should be giving form to their own inventions. This handwork will, at first, be very crude, but as higher types of historic life are presented, we may expect a gradual gain both in the skill of the children and in their appreciation of their inheritance from the the past. In our methods of work there must be constant comparisons between present conditions of the industrial arts and those of the past.

SUBJECTS SUGGESTED: 1. Modes of getting food: Production; transportation; distribution; cooking; utensils; pottery.

2. Architecture: Materials; construction; lighting; heating; tools; decoration.

3. Clothing: Sources; manufacture.

4. Modes of travel.

EXAMPLE: STUDY OF CLOTHING (Second Grade): Examination of the warmth of fabrics used for wearing apparel will cause inquiry into the sources of these materials and an interest in the problem of manufacture. A visit to a cotton or woolen factory would be a good introduction. If this is not practicable, pictures of present methods of manufacture may be shown to the children. Trace the history of a piece of cloth from its source to its use in clothing.

Sources — Wool: Take an excursion to see sheep, if possible. Show pictures of sheep on the farms, and of the washing and shearing of the sheep. Show wool, washed and unwashed.

Cotton and flax: Show pictures of flax growing and of cotton plantations, and of laborers at work on the plantations. Show the raw cotton and flax.

Silk: Use specimens or pictures of silkworms, pictures of mulberry trees, and of the methods of cultivation of the silkworm. Tell the story of the missionaries who brought the silkworm from China to the West.

Represent in miniature form on sand tables: A farm where sheep are raised, a cotton plantation, a field of flax, a place where silkworms are cultivated. Sand, cardboard, wood, and twigs may be used. Let the children write stories about these scenes.

Manufacture—Spinning: Give the children raw wool or cotton, and let them experiment to see how threads are made from it. They will spin with their fingers and discover how awkward it is to hold the material. This will lead to the invention of the distaff, at first a twig. Let them make a smooth stick to use. Next, they will discover that they need something on which to wind the yarn spun, and will invent a spindle, at first another stick. By practice they may improve this until it is a smooth stick with a notch and a wheel. The wheel may be placed so that the spindle will spin like a top.

History of spinning: Tell stories of people who dressed in skins, and of the way in which these people got their food. Tell stories of shepherd life, and adapt the story of the shepherd boy who learned to spin from Ramsden's *Cotton Spinning*. Show pictures of people spinning with spindle and distaff; for instance, the Greeks.

Now let the children consider the difficulties of spinning in this way, and show them spinning-wheels, both wool and flax. They may make parts of toy wheels. Tell them stories of colonial times, and of our grandmothers and their work. Show them the process of carding, and teach them to use the cards. They may next dye some of the yarn with vegetable dyes, and select colors for use in weaving.

Weaving: Let the children suggest methods of weaving, and the possible ways in which weaving was invented. Adapt the story of the invention told in Ramsden's *Cotton Weaving* and tell it to them. Show specimens of weaving with vegetable fiber; for instance, Indian and Hawaiian. Let them also invent looms. They should make looms about a foot long, with end pieces that roll and a cardboard heddle. They may weave strips for some useful purpose.

The Fifth Grade children might make a colonial wheel and colonial loom, and do some work on them, to aid the Second Grade.

Finally, there should be a comparison of the children's work with what can be done by modern methods. Let them examine fabrics, and note beauty of texture and design.

Excursions to the Field Museum to see wheels and looms; to the Art Institute to see tapestries.

References: Richard Marsden, *Cotton Spinning*, *Cotton Weaving*, p. 9–55; *Indian Tribes of the United States*, v. I, p. 76; Government Report, Eleventh Census, 1890; Report of Bureau of Ethnology, 1884–85; Murdoch, Point Barrow Expedition (1887–88); Ratzel's *History of Mankind;* Nadillac, *Stories of Industry;* Yeats, *Commerce and Industries;* Johnson's Encyclopedia (wool); Murché, Science Reader; Mason, *The Origins of Invention.*

Pedagogic School: During the past quarter the students have been studying the origin and history of the industrial arts. They have dwelt especially upon primitive conditions with a view to the use of these arts in the teaching of history in the primary grades. This month we shall picture the industrial conditions of primitive people and work out plans for teaching.

In tracing the progress of early man toward civilization, we shall need to make a close study of geographical environment. The students will consider the adaptation of the continent of North America to people in the hunter and agricultural stages of life, and trace effects of different regions upon the aborigines.

References: Payne, *History of America*, vol. 1; Fiske, *Discovery of America*, vol. 1; Winsor, *Narrative and Critical History;* Shaler, *Story of Our Continent;* Shaler, *Nature and Man in America;* Shaler, *United States*.

Art in Connection with History: (JOHN DUNCAN.) The students will make drawings in colored chalk upon large sheets of gray paper to illustrate the lessons which they will by and by give to the children. These drawings will represent weapons and tools, and scenes from primitive life showing the manners, occupations, and fortunes of the hunter, shepherd and farmer. The training class will also mold the simplest forms of pottery and decorate them with raised and with incised designs.

For work in textiles see Miss Mitchell's outline. An outline for the study of pottery in connection with history will appear in February.

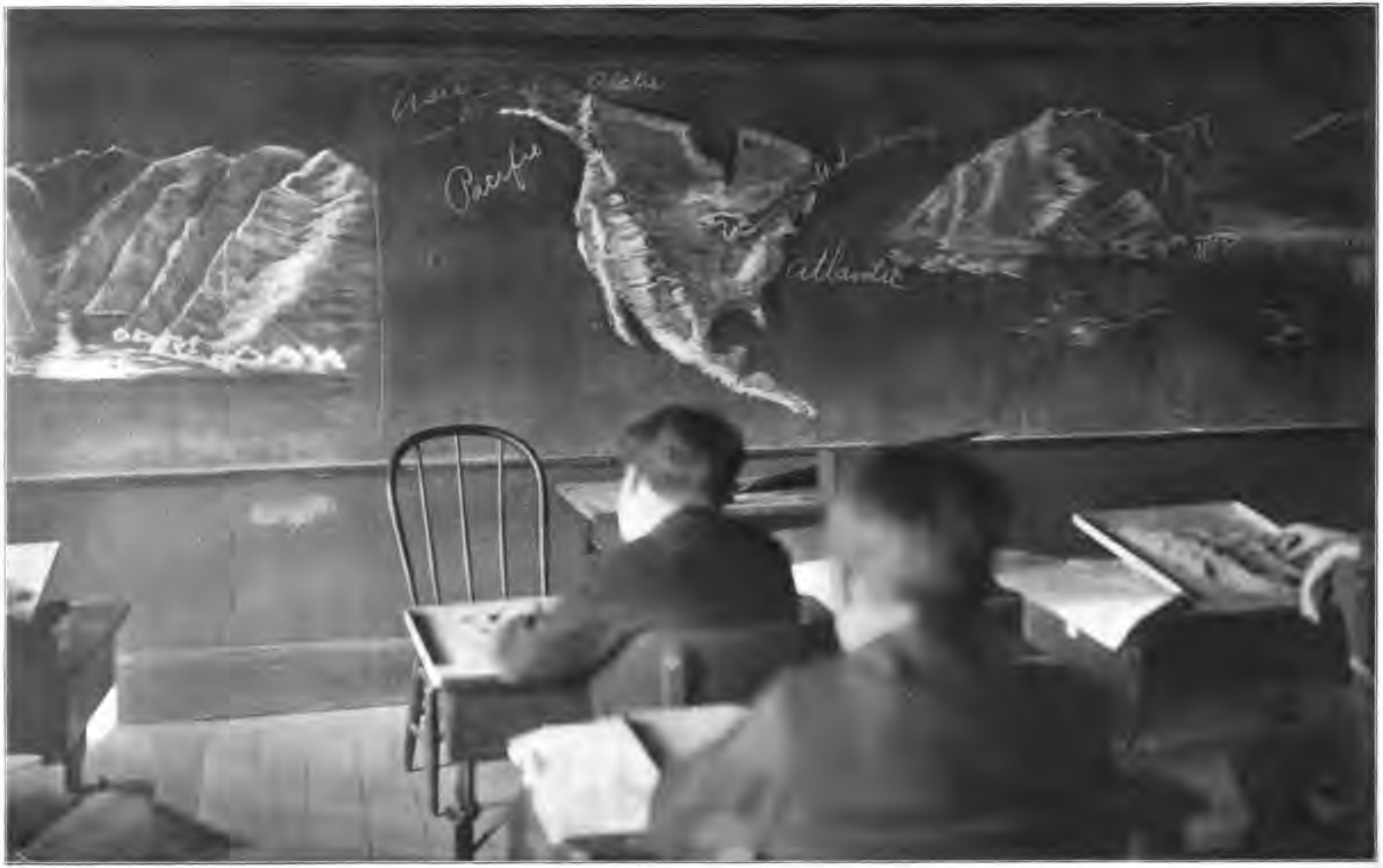
Geography

Zonia Baber

Action rather than reflection characterizes children; hence the desire to create should be given scope for its normal realization.

That expression is a potent factor in education is recognized by all thinking teachers; but the value of the various forms of expression, making, modeling, painting, drawing, dramatic action, in their reaction on thought has not been generally appreciated. Language, oral and written, has been almost the only means employed in the expression of the subjects studied in the schools to within recent times. The other modes of expression were either not taught at all or were divorced from the thought content of the subjects of study. In the study of geography, the necessity of making, modeling, drawing, painting, and dramatic action, as well as speech and written language, cannot be ignored. It is in the making of rivers, valleys, sea-cliffs, sand-bars, beaches, sand dunes, etc., in the laboratory that the fullest appreciation of the work of running water, waves, and wind is found.

The making of characteristic costumes and dramatic representation of customs and industries lead to a better understanding of the people of the various countries. The relief of landscape is most easily and accurately represented by modeling, hence this mode of expression should precede the others in the study of the form of a country. Drawing, though more difficult than modeling, is necessary as a graphic representation of form; while color, which is most important in imaging a landscape, demands the use of paints. When the black of the blackboard has been relegated to the limbo of the past, and certain colored boards on which colored crayons may be used with pleasing effects surround the school-room, the accuracy of the



CHALK-MODELING

pupil's images of landscapes will be greatly enhanced. Making, modeling, painting, drawing, oral and written expression are used throughout all the grades of the Chicago Institute in teaching geography. (See page 410.)

In the elementary grades, whatever aspect seems most characteristic of the people studied will be dramatized. For instance, the Fourth Grade, in the study of Lake Michigan and sea life, will represent certain aspects of a life-saving station.

The Sixth will represent in costume a street scene in southern India—a school sitting on the ground in the shade of a building, natives weaving at the side of the street, pounding brass, grinding corn, and selling small wares.

The ability of the teacher to draw, paint, and model will enhance immeasurably her power in teaching geography. For this reason, as well as for the closer observation and study which results from the demand for expression, the pedagogic class will be required to express themselves continually in these different modes in order that clearer images and greater skill in expression may be acquired.

Pedagogic Class: During the autumn quarter the pedagogic class have tried to interpret some of the physiographic aspects and human activities of the Chicago region. They visited the places where the best examples of certain earth-shaping processes obtain, as along the north shore for stream and wave work; to Dune Park for wind action; to Stony Island and North Shore for glacier work.

A special visit to a farm, together with the human interests exhibited in all the region, formed a basis for the consideration of man's adaptation to his geographical and social environment.

Besides the blackboard drawings necessitated in the class discussion, the students were requested to illustrate their papers describing the field trips.

The work for the quarter was summed up by lectures given by the students selected by the members of the committees into which the class is divided. The talks were illustrated by drawings, maps, charts, photographs, and by projected pictures. Model lessons were given by Mrs. Atwood to the First Grade and by Miss Van Hoesen to the Fourth Grade, and discussed by the pedagogic class.

The work for the pedagogic class for January will be a study of North America, its topography, climate, geological formation, and its influence on life and the world's civilization.

I. Consideration of North America as a great land mass in form, shape, size, drainage, and relation to the other continents of the globe.

1. Climate: Prevailing winds. Movement of storms in the United States. Distribution of heat. Southern limit of the winter isotherm of 32°. Distribution of rainfall; snowfall. What would be the effect on the climate of North America if the eastern and western highlands had been reversed in position? What would be the effect on the climate of the plain if a high range of mountains crossed the northern country from east to west?

What would be the effect upon this region if the Gulf of Mexico and the Caribbean Sea were land?

2. Western Highlands: Extent, altitude, appearance, and formation of Rocky Mountains, Sierra Madre Mountains, Sierra Nevada Mountains, Coast Range, Mexican Plateau, and Great Basin.

(a) Characteristics of river basin found in the western slope of the great highland mass, Colorado, Sacramento, San Joaquin, Columbia, Fraser, Yukon. What attractions for man does this western highland mass possess? What are the influences, both evil and good, of a desert or semi-desert region on the rest of the continent? For agricultural purposes which is to be preferred, an irrigated region or a region of constant rainfall?

3. Great Central Plain: Extent; elevation; winter and summer appearance; glaciated area; account for lakes; non-glaciated region.

Characteristics of the river basins: Mississippi, Mackenzie, Hudson Bay System.

Value of the great plain in the development of the continent.

Would a different arrangement of lowlands and highlands improve the continent as a home for man?

4. Eastern Highlands: Extent, appearance, geologic formation of (a) Canadian Highlands, (b) Appalachian System: New England Mountains; Blue Ridge; Appalachian Valley; Alleghany Forest; Alleghany Plateau; Piedmont.

Account for the position of Delaware, Susquehanna, Potomac, New, and Tennessee rivers. What is the effect of the Piedmont region on the rivers which cross it?

What is the value of the Appalachian Highlands to the present inhabitants of the United States?

In what way did they aid the colonists? What disadvantage were they to the colonists? What influence did they exert on the Civil War?

(c) Characteristics of St. Lawrence River basin?

5. Coastal Plain: Extent; appearance; formation; agricultural value. What influence did the coastal plain exert on early settlement? On the Civil War?

Materials which will be used in the development of the subject: Relief, physical, contour, geologic maps of North America and United States; geological portfolios; U. S. weather maps; crop bulletins; photographs; projected pictures; charts; diagrams.

References: Mill, *International Geography*, pp. 660-790; *Compendium of North America;* Reclus, *Earth and its Inhabitants;* Shaler, *The United States of America;* Davis, *Physical Geography; National Geographic Monograph;* Willis, *The Northern Appalachians;* Hayes, *The Southern Appalachians;* Davis, *Physical Geography of Southern New England;* Russell, *Rivers of North America;* Russell, *Lakes of North America;* Russell, *Volcanoes of North America.* See library reading list on North America.

Expression: The students will be required to model in sand the relief of the continent of North America and the different sections studied; to draw the same in relief on the blackboard and on paper; to make paintings and blackboard drawings of certain typical regions, as of the tropic plains, tropic mountain regions, and regions of Western United States and Mexico, Alaskan fjords and glaciers, northern and central plain, Appalachian region.

Besides discussions in class, the different committees will give illustrated talks on different parts of the country assigned for special study.

In what grade should continental study be introduced?

What kind of maps should be used at the beginning of geographic study?

How can a map be used to perform its function as a symbol?

Why do maps stand in the way of imaging the landscapes which they represent?

What laboratory experiments would aid in imaging North America?

What aspect of the country appeals most to younger pupils?

When should the physical geography of the continent be taught?

Correlation of German

Dr. Siegfried Benignus

It is generally acknowledged that the ideal method of studying German is to go to Germany, study under an experienced teacher, mingle with the educated part of the people, read newspapers, go frequently to the theatre, and attend public meetings and lectures. Since it is possible for only a few to use this best method, we must devise the means in our own environment to realize the most favorable conditions.

Many of the grammars used in school and private instruction are very faulty in giving the student disconnected and meaningless sentences to work upon. The instruction resulting makes the living language an instrument that is useless in most of the affairs of practical life; and the victim of such instruction, when he comes in contact with the genuine language, execrates grammar and teacher. Nothing that is not at least good, every-day German should be taught. The student should occupy his mind and store his memory with nothing but forms such as Germans use. He must never think that he can speak or write German by patching together words with the help of his grammar and dictionary, for the natural sentence, not the word, is the unit of language. Whatever may be the pupil's object in view—speaking, writing, reading, or scholarship—from the very beginning he must be sensitive to the best German. He must think in German, dream in it, joke in it, live in it, as he does in his own tongue. That is to say, he must learn German in the same way and with the same means as he learns English. To attain this end, there is no better help than correlation with the other branches of study.

A good means of acquiring a working knowledge of German idioms is by the use of the language in mathematical work, both pure and applied. With this in view, suitable exercises will be carried through all classes and grades from the time the language is first taken up. For the first year (age 10) the following and similar exercises:

I. Absolute numeral problems:

(1) $42 + 35 = ?$
(2) $63 - 18 = ?$
(3) $12 \times 8 = ?$
(4) 84 + by 12 = ?

If the pupils are found able to handle fractions properly, graded exercises in multiplication and division of fractions will be given.

II. Concrete numeral problems:

(1) Mary lives in Frankfort on the Oder, 80 kilometers west of Berlin; her cousin Fred lives in Brandenburg, 60 kilometers east of Berlin. How many miles is it from Mary's home to Fred's?

(2) William bought a knife; the price was a quarter of a dollar. He gave the salesman a dollar. What change should William receive?

(3) The side of a square is 9 meters long. How far is it around the square? What is its area?

(4) James bought apples at the rate of 3 Pfennige for 5 apples, and sold them at the rate of 5 Pfennige for 3 apples. If he bought and sold 30 apples, did he gain or lose money, and how much?

This work will be extended to fractional problems, if pupils are found capable of profiting by them.

The work for the Sixth, Seventh, and Eighth Grades (forming one class) will be such as the following:

I. Oral arithmetic:

(1) Helen paid ¾ Mark for coffee and ⅘ Mark for tea. How much did she pay for both?

(2) In an orchard 25% of the trees bear cherries. What per cent of the trees bear other fruits?

II. Mental arithmetic:

(1) Henry traveled 200 miles in three days, 25% of which he traveled the first day and 45% the second day. How far did he travel the third day?

(2) What is the amount of 200 Marks for 1 year and 8 months at 6% ?

The mathematical work for the High School until July may be judged from these topics:

History of mathematics:

Read up in Cantor's *Vorlesungen über die Geschichte der Mathematik*, Vol. I; and Ball's *History of Mathematics*, in the library, and report in writing on the following topics: Egyptian and Phœnician mathematics. Did the Greeks learn their mathematics from the Egyptians? Greek schools of mathematics. When and by whom founded? What did they teach? How long did they flourish?

(1) The Ionian School, (2) the Pythagorean School, (3) other schools. Schools at Athens and Czycus. Chinese mathematics and mathematicians. Hindu mathematics and mathematicians. Did mathematics originally start from experimental data?

Algebra:

What can you find about the beginning of algebra? With what nation did it begin? To what particular branch of mathematics did the

Arabs give most attention? Whence do we derive the arithmetical numerals 1, 2, 3, etc.? When did Diophantus live and teach? What particular things do we derive from him? When were Arabian mathematical works introduced in Europe? Explain how to multiply $a^2+b^n-c^5$ by $x^{\frac{1}{3}}-y^{\frac{1}{2}}+z^6$, and read the following expressions in German: $a\times x\times\sqrt{z}$; $\frac{x}{y}$; $z^{\frac{5}{8}}$; x^n; $\sqrt{\frac{x+y}{a+b}}$; $(a+b)(c-d)$; $a^3-b^2=(a+b)(a-b)$.

Let each member of the class present one or more essays on an eminent algebraist.

As observational work in astronomy can best be done during May, this important mathematical subject will be given exclusive attention during that month. Special attention will be given to the German of such subjects as these: Where and when do the sun, moon, planets, and certain bright stars rise, culminate, and set? How long is the sun above the horizon on any given day? How long below? Answer same questions regarding moon and planets. What planets are evening stars during May? What planets morning stars? What phases does the moon exhibit on the successive days of May? New moon, first quarter, full moon, and last quarter. Magnitudes of the brightest stars of the Great Bear, and other constellations. Names of the brightest stars visible during May. German myths relating to the constellations. Give a full description of an evening's study of the stars in the astronomy class. Write an essay on the colors of the stars. Tell all you know about variable stars, double stars. Describe a telescope. Write an essay proving from your own observations that the moon always turns the same face to the earth. Write an essay on the subject of the sun. Why does the sun never show phases? Look up in *Popular Astronomy*, in the library, the aspects of the planets for May, and locate on the sky where they all are. Make a report in German of the substance of any article in which you are interested.

References in Popular Astronomy: Diesterweg, *Populäre Himmelskunde*, 17th edition, 1892; Mädler, *Der Wunderbau des Weltalls*, 8th edition, 1887; I. I. von Littrow, *Die Wunder des Himmels*, 7th edition, 1885; Gretschel, *Lexikon der Astronomie*, 1882; Garret P. Serviss, *Astronomy with an Opera-glass*, 1899; J. Herschel, *Outlines of Astronomy*, 11th edition, 1871; Newcomb, *Popular Astronomy*.

The other branches of study may likewise be correlated. Accordingly the composition work for January will be a selection of general interest in zoology adapted to the capacities of the different classes, as was done in December with the subject of the Rhine.

Animal protections:

(1) shields, e.g. armadillo, turtles, beetles, mollusks.

(2) scales, e.g. fish, reptiles.

(3) quills, e.g. hedgehog, porcupine, sea-cucumber.

(4) stings, e.g. insects, stingray.

(5) nettle-organs, e.g. jelly-fish; burning hairs, e.g. caterpillars.

(6) feigning death, e.g. insects, opossum.

(7) secretions, nauseous, e.g. skunk, mink; colored, e.g. bombardier-beetle, seacat, cuttlefish; slimy, e.g. eel.

(8) nests, e.g. birds.

(9) cocoons, e.g. insects.

(10) protective colorations, generally resembling surroundings; polar animals, mostly white; desert animals, yellow as sand; leaf animals, green or gray; water animals, transparent or slightly tinged with blue; land animals, color of ground.

(11) Rapid change of color, e.g. chamæleons, other lizards.

(12) masking, e.g. crabs, sea-urchin.

(13) mimicry, e.g. insects, birds.

(14) terrifying attitude, e.g. caterpillars, harmless reptiles.

(15) horns, teeth, claws, hoofs, as organs of defense and offense.

(16) defensive and offensive alliances, e.g. bisons, wild horses, wolves, monkeys, birds.

(17) insulation, e.g. marsupials in the Australian region, lemurs in Madagascar.

(18) parasitism, e.g. fluke, tape-worm, crustacea, insects.

References: Alfred Edm. Brehm, *Illustriertes Tierleben*, 10 vol., especially 3d edition 1892-93; Fritz Müller, *Für Darwin*, 1864; Beddard, *Animal Coloration;* Poulton, *Colours of Animals;* Gordon, *Animal Life;* Thomson, *The Study of Animal Life;* Wallace, *Natural Selection;* Carus Sterne, *Werden und Vergehen*, 3d ed. 1886; O. Hertwig, *Die Symbiose*.

Other appropriate topics in zoology are as follows: Animal homes, such as birds' nests, dens, holes, holes in earth, holes in trees, insect homes as cocoons, nests, hives. Prehension of food, that is, methods by which animals receive food.

Topics of general interest in plant life: Food plants of the old and the new world. Protections against the attacks of animals (spines, thorns, prickles, nettles, nauseous secretions), and adaptation to atmospheric influence. Distribution of plants, (1) distribution of seeds, (2) adaptation as determined by climatic conditions.

The fine zoological and botanical specimens in the Museum of the Chicago Institute, which are most skillfully selected and arranged, will be an excellent aid in bringing the pupil directly in contact with nature. Excursions to the parks of Chicago and the environments of the city, and visits to the Field Columbian Museum and the Academy of Sciences, will reinforce and expand the acquired knowledge. As to the field trips of the whole school, they can be made more profitable than they hitherto have been, so far as German is concerned. Upon arrangement with the other instructors, the teacher of German might take charge of a section of the pupils for an hour or so, or, at a proper time, he might give a lecture to all the German pupils.

Geography also offers a vast field for correlation. Out of the following general topics, a great variety of appropriate subjects may be chosen, according to the necessities of the time being.

I. General Geography:

1. The earth as a celestial body.

2. The earth as a physical body; (a) interrelations of land and sea, (b) the sea, (c) the land, (d) the atmosphere.

3. Life on the earth; (a) the earth as a dwelling place for man, (b) the five continents.

II. Commercial Geography:

Plants, animals, minerals, international commerce, transportation.

III. Astronomical Geography:

(a) apparent movements of the stars, (b) the earth and the real movements of the stars, (c) determining of locations.

IV. History of Geography.

V. Political Geography.

The composition work for the month of December is the subject of the Rhine, for all classes. All the special grammar and orthography for each class is included in this month's work. The pupils have a keen interest in this, one of the most interesting rivers, to see which a great number of tourists come from all parts of the world, and the beautiful scenery of which is glowingly described in English literature (e.g. Byron: *Childe Harold*, Canto III; Longfellow: *The Golden Legend*, *The Castle of Vautsburg on the Rhine*).

A field for correlation quite as extensive, if not more extensive than that of Geography, is offered by History. As a beginning, it is intended to devote February to a study of the American War of Independence.

There is no doubt that the other subjects of study, including even Gymnastics, may be profitably correlated. The general plan is not yet formulated.

Should there be a demand for instruction in the Pedagogic School, appropriate selections in psychology, pedagogics, and history of education may be made.

The German songs that have been taught by Miss Goodrich have proved an effective means of correlation. Art also promises well in this respect.

On holidays and at other fitting times, performances, either composed for the occasion or taken from some good author, may be given. Frequenting the Chicago German theatre is also desirable. The teachers of the different subjects might give their pupils references to German text books, cyclopedias, and general literature. That other languages reinforce the instruction in German, particularly in the case of advanced pupils, is a matter of course. To make this reinforcement possible, it is absolutely necessary that the teacher of German should be conversant with the classical languages, Latin and Greek, and, if may be, with French.

In all correlation, one great principle must guide the teacher; that is, to go from the easy to the difficult without leaving gaps, and to include in the instruction the difficult parts of grammar, adapted to the comprehension of the pupil.

These statements lead to the inference that the teacher of German should have broad culture and high capacity; otherwise correlation, instead of being a potent factor in education, becomes a shallow and unmeaning thing, which is likely to do more harm than any of the old methods.

For January the topics in grammar, orthography, and writing, as given in December, will be continued in all classes. In the fifth grade will be added: (a) place of objects in the schoolroom; (b) grammar: sentences involving the imperfect of "sein" and the present tense of "haben;" (c) simple expressions as: Wiegehtes Dir (Yhnen)? and the answers.

The reading exercises for the beginners is contained in Ahn's *First German Book;* 6th and 8th grades in Ahn's *Second Course;* High school, 1st and 4th year, continuation of *Bilder buch ohne Bilder;* 2d year, completion of *Der Neffe als Onkel,* and extracts from *Die Jungfrau von Orleans,* and from *Maria Stuart* for January. The memorizing work, the importance of which was referred to in December, is given in the grade outlines.

French

Lorley Ada Ashléman

The work for January will center about the preparation for February, the carnival month. It is proposed to have the school represent a world carnival, in which a procession of the nations will be joined to the French festival outlined below. All nations have their fêtes, their carnivals. Egypt celebrated the festive days of the Bull Apis; the Jews, the festival of Purim to commemorate their deliverance from the massacre planned by Haman; the Greeks, their feasts of Bacchus, and the Romans the Saturnalia.

In Persia and Babylonia at the beginning of spring a beardless, and if possible one-eyed, buffoon was set on an ass, a horse, or a mule, and conducted in a sort of mock triumph through the streets of the city. In one hand he held a crow, in another a fan, with which he fanned himself, complaining of the heat, while the people pelted him with snowballs. After the second hour of prayer he disappeared. The purpose of the "ride of the beardless one" is obvious; it was meant to hasten the departure of winter and the appearance of summer. It seems a pretty thought to believe the "confetti" originated in Persia, in the snowballing of the harlequin by the populace, personifying the departure of winter.

In French the work will center about the reign of Louis XIV., a period which has been chosen because it is one of the greatest in French history, and one of the richest in philosophy, literature, and art. To it belongs the father of comedy, Molière; of tragedy, Corneille; the fable-writer, La Fontaine; the mathematician, Pascal; the philosopher, Descartes; the theologians, Bossuet and Fénelon; the letter-writer, Mme. de Sévigné.

We will dramatize from the life of each one of these some little episode characteristic of the man's thought and work. In this way the work of the whole school will be correlated in the carnival. For example, interest in geometry will be deepened by a representation of the child Pascal discovering on the window-pane with a piece of charcoal the relations of the lines of a triangle.

Descartes will be shown burning his treatise on "The World," because he feared he would meet the fate of Galileo, and thought that he must live for the man that was not yet born. La Fontaine will be followed by a little train of children, each one representing a character in his fables.

For the La Fontaine procession, see Grade Outlines. The High School is reading and dramatizing *La Belle Nivernaise*, by Daudet; *Quatre Vingt Treize*, by Victor Hugo, and memorizing poems by Beranger and Lamartine.

The February number will contain the libretto of the carnival, which will form the basis of the French reading lessons for January. Teachers wishing to use it for reading lessons may obtain it in leaflet form from the Book Room of the Institute.

Music

Helen Goodrich Bertha Payne

The commonly accepted standard of choice for music for children seems to be below that of literature and pictorial art. We have arrived at a point where sensational literature and sign-board art are out of the question in good schools; but a similar grade of music appears on all sides without what would seem like an adequate protest. The fact that there exist standards for music corresponding in essential respects to those applied to literature and art needs emphasis. To discriminate between merely pretty, harmless music and that having positive inspirational quality and a pure, childlike spirit is perhaps not easy; but to perceive the difference between a very low grade and a very high one is not so difficult, if the same taste and judgment is exercised as in departments where discrimination is a more general acquirement. It is usually considered, for instance, that "go" — precise, stirring rhythm — is the one thing needful for a march; the physical alone is considered. Now the first requirement for a quick, orderly march is, of course, quick, exact coördination of muscles; and this may be said to depend entirely upon the stimulation of obvious, exact rhythm in the music, together with a stirring spirit which cannot be analyzed or described; but the second and hardly less important consideration would seem to be the subtle reflex effect upon mind and heart. There is a lack of economy apparent in a march which develops day after day only the physical side, and fails to place before the child at the same time appropriate emotional qualities embodied in a logical, well-proportioned, and beautiful musical form.

And yet we hear on all sides — for physical culture, for marches, for dancing — a kind of music which has, without doubt, a tendency to confuse the mind by its lack of form, and to vitiate the taste by its lack of distinct and ennobling character.

It is sometimes urged that only the musical children are affected by the music in any other than the most superficial way, that only the rhythm is important for the majority. This may or may not be true. Children accustomed to hearing nothing but a disconnected series of sounds on the piano, instead of musical ideas expressed in beautiful musical form, cannot be expected to have much discrimination; but granting that is true, the musical children and those accustomed to hear good music feel the influence, and the rest are missing their possible opportunity for development.

There is, moreover, much doubt about the lack of influence of music for good or evil upon even the so-called unmusical children. A few experiments could be made by having some pianist who can bring out the spirit of different kinds of music play for the children to dance by, in their own way. "Rag-time" calls forth "cake-walk" movements invariably; and equally vigorous and rhythmical, but refined, music results in refined movements.

The general character of the instrumental music in schools is to be seriously criticised. It consists of a rather narrow range of pieces, chiefly "two-steps" and "rag-time," a kind of music associated with the vulgar or sentimental or trivial ideas of the typical street-song; this is drummed upon the children's nerves day after day, often with the pedal held down continuously, thus producing an indescribable din and jangle. The piano is reduced to a very low level indeed; its possibilities of clear and beautiful expression are lost in a blur of inaccuracies.

The music published in this number of the magazine was used for two of the processions in the Thanksgiving exercises. *La Sylphide*, which has a graceful, flowing rhythm in ¾ time, was played for the procession of Greek maidens. It presents a light, steady, perfectly-balanced onward movement. A simple dance step, accompanied by lateral arm-movements, suggested itself to the pupils, the extremes of the arm-movements being accommodated to the first beat of each measure. The balance in the rhythm for the feet is preserved in the ¾ time, the accent falling to the left and right foot alternately; i. e., (left) 1-2-3, (right) 1-2-3. The piece must be played very smoothly and evenly. It was found useful in the Kindergarten for "the thread," "the stream," and similar rhythmical plays. It has no characteristics which might unfit it for these purposes, though ballet music in general could not be recommended.

The *Gavotte* by Reinicke was used for the Greek children, who came singly down the middle aisle of the gymnasium, dressed in short white tunics, wreathed with colored leaves, and bearing baskets of fruit and flowers. They were supposed to be on the way to a sacrifice to Bacchus, and the music was selected as reflecting the gay, childlike spirit of the scene. The marked frequently-recurring accent, with the suggestion of a glide on the last half of the measure, was quickly appreciated by the children. The lightness and delicacy of the Gavotte, its grace and childlike spirit, had a perceptible influence upon their action. For the priest of the scene the *March Religieuse* from Mozart's *Magic Flute* (see Collection Litolff, Marsch-Album, No. 975) was played—a simple, serious, and dignified march.

For the English Harvest Home, Spindler's well-known *Polka* was played, and in this connection gave a sense of spirited rustic merriment which added much to the scene. The first beat of each measure receives marked emphasis.

Wherever a pianist is available who can reproduce the spirit of the music for children by Schumann, Reinecke, Jensen, Hiller, Lichner, and Gurlitt, there is a supply of the most varied and lovely material for all occasions demanding piano music, excepting the marches. Names of good ones have been printed several times in the COURSE OF STUDY, and further lists will be added from time to time.

Pedagogic Class

This class will continue its work in song study and singing, with class work in breathing and vocal exercises given as incidental help. We find still that the class work in vocal drill is of very little value in overcoming defects in the use of the vocal organs, and for this reason the individual help is still given upon the plan begun in October. The results have been so good that this work will be carried on throughout the course.

In these personal consultations the students are now grouped in twos and threes, so that each may be helped by listening to the voice of the other, noting the deviation from pure tone, searching for the cause, and watching the effect of the remedial exercise given by the teacher. Several members of the class are now ready to be of real assistance to others in the practice periods. This plan involves much more than vocal drill and more than ear-training, though that is an important part. The students become much keener in the discrimination of pure tone, quality of tone, accuracy of attack, and of pitch. Keenness of discrimination, however, is not the end, but is sought as a means toward helping oneself and others to attain full control and use of the beautiful human instrument in expression.

We have found in these lessons that many faults of throat tension and stiffness in jaw and tongue have been helped, but that the fundamental and difficult thing is to obtain firm diaphragmatic breath control. This once gained means immediate help in the other difficulties just mentioned. We therefore repeat the emphasis before laid upon its importance. The breathing exercises outlined in previous numbers are all that are necessary, but some further directions are given for their use:

I. Clothing must not be tight at the waist.

II. Chest must be kept well-filled but not tense; easily active but not lifted with muscular effort at each inhalation.

III. Inhalation for singing taken with attention concentrated upon direction of air to the lowest part of the lungs.

IV. Breath taken quietly, with steady effort that is felt at center of front of waist in the form of an *inner tension*. This causes apparent but not sudden pressure outward at the point toward which breath is directed.

V. Resonant tone: Follow this kind of inhalation by singing vowel *o* — long, on a middle pitch (*g*, *a*, or *b*). Direct tone to lips while singing; *keep up feeling of waist expansion felt during inhalation.* This fiction of taking breath while in reality giving it out results in:

1. Retention and economy of breath.
2. Use of full chest cavity to increase volume.
3. Relief of wrong throat tension, in which strain comes upon throat in effort to sing a high note, or when breath is nearly gone, by sympathetic action of throat muscles about the larynx.
4. The direction of breath to lips secures additional resonance from bony cavities of head and contact with hard palate.

VI. Repeat exercise on vowels ee, ā, ōō, äh, being careful to keep tongue relaxed.

The study of children's songs will be continued, and a discussion of music needed for gymnastics in rhythmic games and in marches will be taken up. This will be in direct preparation for the direction of children's games.

Songs. Text considered alone.

1. Imagery involved; familiar ideas built upon experience of children.
2. Images brought into new relations.
3. New relation involves an arrangement that is pleasing. Ideas aroused have a distinct "feeling tone."

Relation of fact and poetic element.

4. Childlike simplicity of ideas embodied. Distinction between childlikeness and childishness.
5. Form of meter; true to its type; clear or confused. Lines short or long: which are best in child's song?
6. Reasons on psychologic side.
7. Study *Christmas Carol*, E. Smith, in First Book, Modern Music Series, p. 128. Compare with *Garden Song*, E. Smith, in Songs for Little Children, Vol. II, as study in form; effect of long phrases.

Text and Tune.

1. Agreement of words and melody. Is meaning of words emphasized or blurred by its musical setting?

2. Adaptations of words to texts not composed for them.

3. Rhythm and Meter; relations between the two.

4. Unity of sentiment between words and music.

5. Collect and bring to the class songs that seem to you to be especially good in this agreement between words and music, both in sentiment, mood, and in accent. We find that texts demand music of distinct character. What have the elements of pulsation, variation of pitch, and combinations of tones in chords to do with this character? Since pulsation in the form of rhythm is a most important element as a stimulus to movement, we will study that essential first.

Rhythm.

1. Physical basis: What are the necessary rhythms of life? of action? tactual and auditory stimuli that arouse rhythmic images?

2. Experiment with watch, metronome, and with the sounds caused by the revolutions of train wheels. Do they group themselves? If so, in what forms? Can you vary these forms at will?

3. Does the rhythm possess you, or do you control the rhythm?

4. Reproduce these rhythms in measure, in periods.

References: Titchener, *An Outline of Psychology*, p. 172; Wundt, *Human and Animal Psychology*, p. 262; Scripturé, *The New Psychology*, p. 13; Fiske, *Outlines of Cosmic Philosophy*, p. 299; Lanier, *Science of English Verse;* Bolton (monograph); Froebel, *Education of Man*, Sec. II, p. 70; Richter, *Levana*, p. 162.

Physical Training

Carl J. Kroh   Caroline Crawford

The interdependence of mind and body is best exemplified by those studies which involve action, observation, and representation. Wherever this has supplemented the unrelated methods of old, mind and body training may be said to go hand in hand, as in the case of the numerous forms of manual training.

Physical training, gymnastics, through its education of the neuro-muscular organism, reinforces all the modes of expression. To strengthen the attention and memory by exercise in "doing" is to strengthen the idea. Our motor experiences become our mental experiences, emphasized in many ways through our sense-perceptions. Perceptions of weight, distance, and resistance, for instance, are primarily acquired through the study of our own movements. Later, these perceptions are applied in movement-forms of a more complex nature, required in our daily pursuits. Properly directed effort thus enables us to use our muscular system in an efficient way; motion and locomotion are economically adjusted and the paths of least resistance are established.

Naturally, the child has already developed the fundamental movement-forms, regarded as the basis of all specific training. New co-ordinations are now required, and the importance of appropriate procedures, conducive to correct habits of action, is constantly emphasized. This distinctly educational end is dependent in many ways on functional improvement. It implies the improvement or maintenance of health. Hygienic and educational ends cannot be disassociated.

The order of the development of the nervous system, the principal factor in education, and its ability to receive and hold impressions and to record effects, in a measure determine the characteristic procedures of rational physical training. Direction in gymnastic training, therefore, to become duly effective, must be in accord with certain pedagogical principles. It must conform to an elementary order. The pupil's ability to do must not be exceeded through premature demands for precision, accuracy, strength, or skill. To become nerve-stimulating and interesting in its order and development, action must be so planned that the cultivation of the volitional powers may proceed without the retarding influences of fatigue.

As success in manual training depends upon the exactness of the measurements, the correctness of the constructive design, and the accuracy of co-ordination, so success in gymnastics, which implies a better adjustment of the whole muscular organism toward accurate, quick, and skillful response, depends upon the most careful attention to the details of progressive development.

As each movement-form in itself represents a mechanical problem, attention at first must be concentrated upon it alone. The order of procedure must be natural, the sequential development logical.

One of the first studies during the past quarter involved tests of control. A newly organized school met for the first time. The classes moved from place to place in an orderly manner, but without the characteristic dispatch of purposeful movement. In the Pedagogic School, marching, therefore, was proposed as a topic, and the order of its development attempted in practice. Rhythm in uniform forward movement was regarded as the first requirement, the order of development being from slow to moderately fast rhythm. To insure uniform halting, the step was next considered. Uniform movement, rhythm, and step attained, halting was practiced. Halting from marching on place (marking of time), requiring, as it did, less control, there being no momentum to overcome, although the exercise was classed as volitional and not reflex, was considered a preparatory practice to halting in movement from place. Change of direction was practiced in the same way by facing on place, then in connection with movements on and later from place. The complete exercise was finally repeated in running.

Springing or jumping exercises were practiced in a like manner. Jumping from a starting-line, standing, to command and without special direction, preceded the special practice of "start" and "landing." Good form in execution invariably determined the next step.

In a discussion of details of execution this order was reaffirmed in an interesting manner. The first interest of a class of pupils in marching exercises was recognized in the attention aroused by the regularly recurring step. The pleasurable satisfaction which came with the fairly well-marked execution of the alternate slow and moderately fast rhythmic movement was augmented when the halting to command was accomplished equally well, although the distances between pupils became deranged. The adoption of some mode of halting seemed advisable. This again necessitated practice. In the beginning the class had to be cautioned before the command to halt could be executed. Inhibitive impulses varied. Attention! Halt! was spoken on the right step, the left foot was advanced and the right foot placed next it without overstepping. In this way ample time for stopping was allowed and uniform halting became possible. In the upper grades the direction to halt could now be given with either step, and later instantaneous halting, left or right, was successfully attempted. The repetition of this practice in running required a high degree of control and was possible only with the High School boys, and then only when specially signaled. The practice of facings and movement in different directions, of modes of movement, forward, sideward, backward, followed in quick succession.

Helpful suggestions were made. The time required by the different classes to cover the distances from the class-rooms to the gymnasium or play-grounds, for instance, was ascertained through a comparison of steps and seconds. The design of a running course was preceded by interesting number work. Number work was also correlated with the study of ventilation. The gymnasium, locker, and dressing-rooms were measured, and heights ascertained by triangulation. This led to an estimate of the volume of air in the different rooms, to tests of individual breathing capacity, and to a calculation of the air needed in the respective rooms. (See Grammar Grade outlines in December Course of Study.)

Jumping without direction at once revealed the steps to be followed in practice. Pupils jumped from the board upon the mats awkwardly, without yielding, on the whole foot, etc. To obviate this difficulty, attention was directed to the execution of the foot and leg exercises alone, the arms being held in fixed positions, as with hands on hips, or placed on shoulders. Heel elevation, knee-bending, landing with proper yielding and erect body, as indicated in the practice of the start, was successfully mastered; the arm movements accentuating the jumping effort were also separately practiced, and with reference to direction of jump. The combination of the various movements and their correct execution over increased heights and distances became possible in rapid and orderly work. The ill effects of faulty jumping, noise, etc., were avoided. Greater ease of movement and perceptible improvement in bearing and carriage indicated much better control.

Progress in the above practice of marching, running, and jumping forms, however, depended much on the emphasis placed on the practice of free standing exercises. Their importance as a means of elementary body-building, as well as of thorough development, is fundamental. They are invaluable as a means of preparation for the more progressive work of the gymnasium.

Marked differences were suggested in the execution of exercises by boys, as distinguished from an execution of similar exercises by girls. With boys a different treatment, both in matter and method, is required than with girls; the need of swift, tense, and strong exercises predominates; whereas with girls a slow, rounded and graceful movement, to the exclusion of all sudden and strenuous exertion, seems to be required.

Thus the acquirement of appropriate movement-concepts, gained through resolute and discreet application in gymnastics, becomes a means of reinforcing all work requiring correct observation and representation.

Answers to Questions

The question has been asked, " How do you test individual proficiency in gymnastics?" The answer is, that this testing is going on all the time. It is summed up in the final " course tests"—an inquiry into the student's proficiency in skill, dexterity, strength, and endurance. These tests embrace contests and appropriate exercises, approved and judged by the staff of the Physical Training Department conjointly with the Faculty Committee on Sports and Games. Together with the record of the student's growth and improvement, established through a comparison of physical measurements taken at the beginning and close of the school year, they reveal his rank in his class.

"Do you have recreative forms of exercise, as plays or games, in connection with your regular gymnasium work?"

Yes. The indoor practice of games and plays of the Grammar Grades during October included a number of running and tag games, as "peel-away," and ball games, as "roll-ball," and "pass-ball." The outdoor practice consisted of football games. In November "dodge-ball" was played; the game of "basket-ball" was suggested. Outdoor practice of football teams closed with a contest between an upper grade team and a team from the University school.

Records in standing and running broad and high jumps, and in climbing, were taken toward the close of the month.

Indoor practice during December included practice in "basket-ball," "volley-ball," "battle-ball," and "curtain-ball." Teams of the Academic and Pedagogic departments met at various times in contests. The Grammar Grades and High School classes played "hare and hounds" in Lincoln Park, also "center-ball."

Peel-away, pass-ball, roll-ball, center-ball, volley-ball, hare and hounds, etc., are described in Vols. II–VII of *Mind and Body*. For football, see *The Spalding Guide*.

The School Museum

Ira B. Meyers

The Museum deals directly with materials used in the regular work of the school. In its relation to field, laboratory, and class-room work, it aims to aid students in selecting and arranging materials to illustrate points of class study and to afford them the advantages of materials in study.

The collected materials in the beginning consist of more or less isolated specimens, which soon begin to combine into related series; as an example, a piece of weathered sandstone, a glacial bowlder or a beach pebble may illustrate forms of rock disintegration. These accumulated specimens are arranged into a series to illustrate the action of the different agents of erosion, and the appearance of the materials on which they act; e. g., (a) weathering, (b) wave-action, (c) running-water, (d) wind, (e) glacial action.

These again separate into series showing the effect of each agency on a single variety of rock with different stages of disintegration and the final disintegrated product; e. g., clays, sands, and soils.

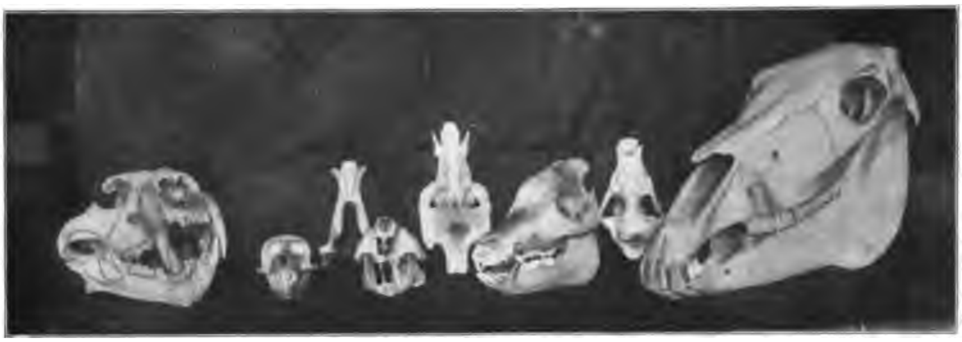
Similar collections are made illustrating some natural or industrial relation of plants, animals, or minerals; e. g.:

1. The relation of form to function in animals and plants. (See series at end of paper.)
2. The relation of color to function—insect or plant coloration.
3. Stages and processes from iron ore to finished steel.
4. Stages and processes from cotton plant to finished cloth.
5. Various commercial products received from a single natural product—coal. The seeds that may be selected from the natural and industrial world are as varied as the needs and conditions of nature and man.

Collecting demands of the student a definite purpose to insure the selection of materials that will show relationship whenever they exist.

The educational value of any material is its appeal to the observer, and in this appeal it must reveal function or force. It must reveal itself as being what it is because of its position in nature.

All materials exhibit relations of force or function, but these relationships are



LION MONKEY BEAVER HOG DOG HORSE

frequently so distributed through time and space as to remain isolated or obscure; e. g.:

1. The various phenomena of erosion, transportation, and deposition as related to soils and sedimentary rock.
2. Phenomena of plant distribution.
3. Phenomena of growth and decay.
4. Significance of form and color in animals and plants.
5. Stages of development in methods of fire-making, illumination, and heating.

One function of the School Museum is to accumulate and arrange materials that will bring together in the material itself the observations and studies of the pupils. The nucleus of this material must be selected from the mass of commonplace material in the student's environment.

Preparation of Museum Series in Dentition: (See November COURSE OF STUDY—*Physiology of Nutrition.*) The special function of teeth is to secure food and reduce it to a state ready for deglutition. Their form, structure, position, relation of upper to lower, and jaw movement are adaptations to this end. The various forms and adaptations of teeth may be fairly well represented by preparing for study skulls of cat, dog, sheep, hog, rabbit, etc.

Methods of Preparing Skulls for Study: 1. Having secured skulls, remove the fleshy portions with an ordinary penknife.

2. Place trimmed skull in an iron free vessel of water, allowing it to remain until flesh loosens from the bone.

3. Remove loosened flesh, wash skull with fresh water, and scrub with stiff brush.

4. Place washed skull in a hot solution of chloride of lime and water (⅛ oz. chloride of lime to 1 gal. water) and allow it to remain six to eight hours. (Care needs to be taken that the bone is not softened by the chloride of lime.)

5. Remove from chloride of lime solution; place it in the sun on cloth to complete bleaching. While bleaching, turn it frequently so as to expose all sides to the sun.

NOTE.—When the process of maceration (just described) is not feasible, skulls may be prepared by boiling with small amounts of washing soda or chloride of lime, care being taken that solution is not strong enough to attack the bone.

For more detailed directions for preparing animal materials, see Rowley, *The Art of Taxidermy*, Appleton.

Sciopticon

SPECIFICATIONS FOR THE CONSTRUCTION

Designed by C. W. Carman

The sciopticon, or "magic lantern," working drawings of which are given herewith, is designed in such a manner that it can be constructed in the manual training room or carpenter-shop. It not infrequently happens that the teacher in a country school or small town finds that the work could be made more profitable and interesting by means of some form of projecting apparatus. The appropriation for apparatus, however, is often found to be too limited to permit of a purchase from the regular manufacturers. An enterprising teacher will find a way to obtain the few dollars needed to provide the apparatus the working drawings for which are here given.

SPECIFICATIONS. — The apparatus consists of a pine board 24 inches long and 8 inches wide. This board is supported upon two strips 1 inch square and 24 inches long. On one end of the board with pine strips 1 inch square is built a rectangular frame, 10 inches long, 8 inches wide, and 11 inches high. Extending from this frame, along the center of the board to the other end, is attached a guide for the objective support. The front of the frame is closed by an inch board, in the center of which is a 4½-inch opening for receiving the condensing lens. Grooved strips are mounted on the front as a slide-holder. The sides and rear are closed by means of woolen cloth buttoned on the frame. The objective support is constructed from sheet-iron and a hollow wood cylinder. The top is constructed from sheet-iron and can be obtained at any tin-shop. Any form of illuminant such as oil lamp, acetylene (bicycle lamp), gas, lime-light, incandescent or arc light, may be used.

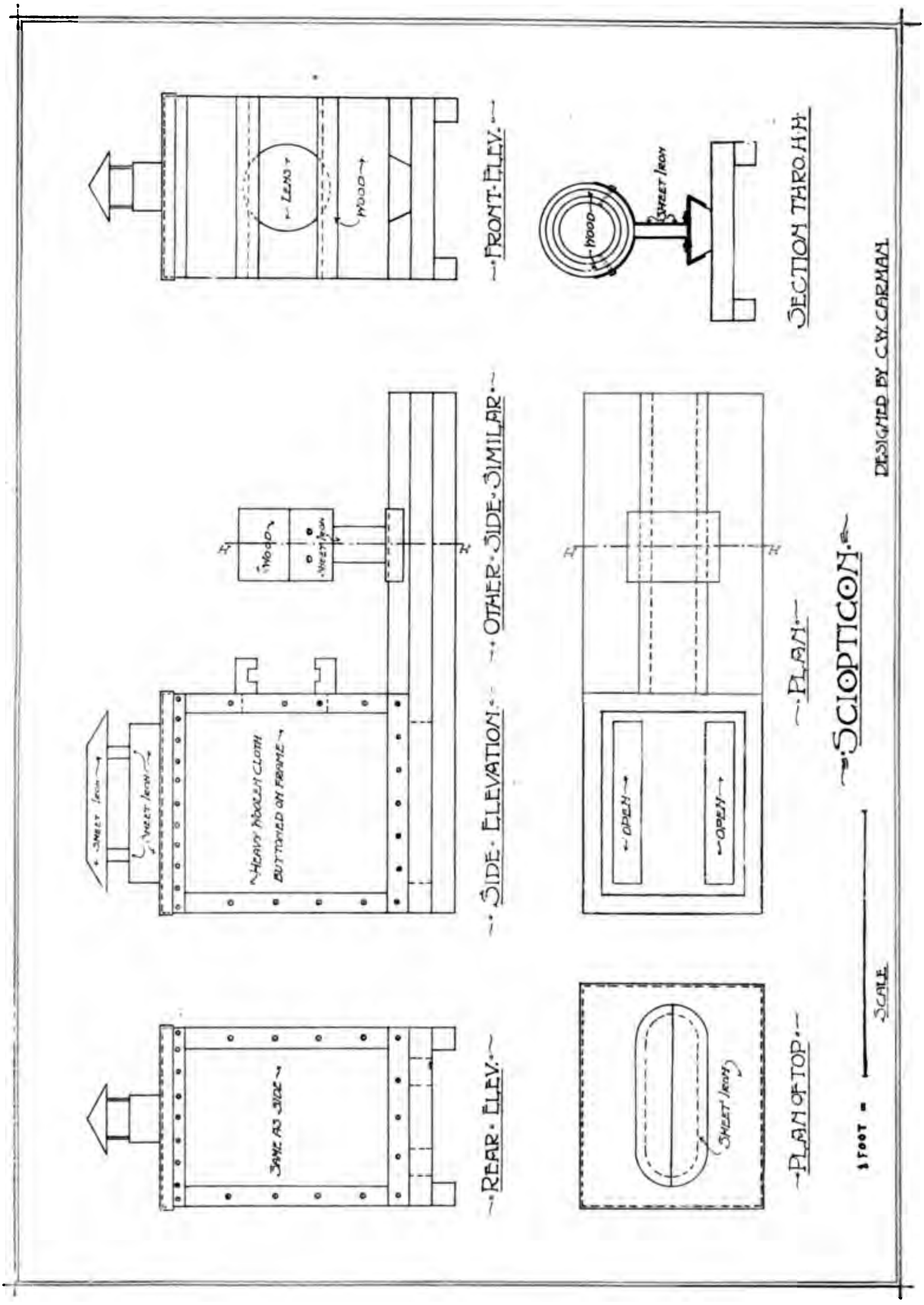
The following is an estimate of the expense:

Lumber, screws, and carriage buttons	$0.30
Sheet-iron top and objective support	1.50
Condensing lens, mounted	2.00
Objective, mounted	3.00
Oil lamp with reflector	.50
Screen, 2½ yards sheeting, 2 yards wide	.60
Total	$7.90

This apparatus may be converted into an heliopticon for the additional sum of $5.00.

Other forms of illuminants may be obtained at the following prices: Acetylene outfit, $16.00; lime-light burner, $6.00; incandescent electric lamp, $2.50; incandescent gas burner, $1.00; arc light, $8.00.

The form of illuminant to be used depends upon the locality in which the apparatus is to be operated. Electricity is the cheapest and most satisfactory, if it can be obtained.


REAR ELEV.
SAME AS SIDE
SIDE ELEVATION
SHEET IRON
SHEET IRON
HEAVY WOOLEN CLOTH BUTTONED ON FRAME
OTHER SIDE SIMILAR
WOOD
SHEET IRON
H
H
FRONT ELEV.
LENS
WOOD
PLAN OF TOP
SHEET IRON
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SECTION THRO. H.H.
WOOD
SHEET IRON
SCIOPTICON
DESIGNED BY C.W. CARMAN
1 FOOT =
SCALE

The Organization of a Library

Irene Warren Frances Simpson

Uniform Size of Paper: Librarians have found that in filing material and in keeping many records it is more advantageous to use slips and sheets than bound books, because they permit intercollation without disarrangement or copying. Therefore they have adopted uniform sizes of paper, also boxes and cases for filing which have been placed on the market as standard library supplies. The following are the measurements of the paper adopted:

L size (letter), 20 x 25 cm.
N size (note), 12½ x 20 cm.
P size (postal), 7½ x 12½ cm.
V size (vignette), 5 x 7½ cm.

Folios: Folios for filing notes and papers may be made of heavy manila paper, cut twice the size of the paper to be filed, folded in the middle, and lower edges pasted together so that only the upper and right sides are left open, and the contents of each folio given in the upper left-hand corner.

Mucilage: The best mucilage is the Higgins' Drawing Board mucilage, sold in jars of three ounces or more.

Ink: In library records the essential features of ink are blackness and permanency. The Carter's Koal Black and Carter's Fast Red ink have been found the best. In marking labels and guides, Higgins' Water Proof ink is used. Ink should be kept in a stand that will protect it from the dirt. The Perfect Ink Stand does this as well as any.

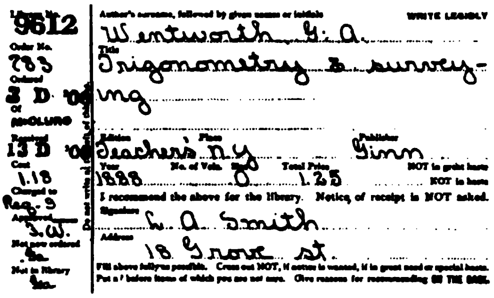
Penmanship and Pens: It is essential that the handwriting should be very plain, so that the cards in the catalog may be easily read by the public and no possible mistake made in reading records. For that purpose the library handwriting has been quite universally adopted. It is a plain round hand, with a tendency to a back slant, as seen on the sample order card. The Library Bureau pen, No. 3, is used, and a cork penholder, because it is very light and large enough to keep the hand from cramping in writing.

Guides: The guides are made of manila boards which project a quarter of an inch above the P and V slips, and are cut in thirds and fifths. They indicate the classification of material filed, either alphabetically, numerically, or by subject, as desired.

Selection of Books: The selection of books is one of the first important problems in the organization of a library. The lists of books published by librarians and educators should be carefully examined and the books best adapted to the anticipated needs of the library selected. The new books should be carefully kept up with as they are reviewed in the *Critic*, *Dial*, *Literary World*, *Bookbuyer*, *Literary News*, *Bookman*, *Literature*, and also the reviews given in the general periodicals, such as the *Review of Reviews*, *Atlantic*, and *Harper's Magazine*. Every one who is attempting to keep up with literature in general, or any subject, should follow the issues of the *Publishers' Weekly*. This gives each week an alphabetical list of the new books and new editions, with full descriptive notes, but no attempt at criticism. Notes from the publishers and booksellers, and various bibliographical information, are given. Every month a classified list of the new books arranged by subjects, is published.

It is more economical to make working

lists of books on slips than on sheets. A standard card of manila paper is used by the librarians, as shown in cut.



9612
Order No.
783
Ordered
3 D '0
Received
13 D '0
Cost
1.18
Charged to
Reg. 9
Approved
J. W.

Author's surname, followed by given names or initials — WRITE LEGIBLY
Wentworth G. A.
Title
Trigonometry & surveying
Edition — Place — Publisher
Teacher's N.Y. Ginn
Year — No. of Vols. — Total Price — NOT in great haste
1888 — 0 — 1.25 — NOT in haste
I recommend the above for the library. Notice of receipt is NOT asked.
Signature
L. A. Smith
Address
18 Grove st.

One book is entered on each slip. When the list is decided on, it must be carefully gone through to avoid any duplication of books. It is then necessary to go through the list again to see that authors and titles are correct, and to make selection of the best editions and to get the list prices. Every publisher will send his catalog on application. A file of these, arranged alphabetically will be found valuable to any one selecting or buying books. They can be filed in the standard pamphlet boxes, or if funds will not permit that, tied up in small packages, carefully labeled. The publishers' catalogues are arranged and bound alphabetically in one volume each year, which is known as the Trade List Annual, and which will be found in every library and bookstore. The American Catalogue is an alphabetical arrangement of authors and titles, with bibliographical information and prices. A second arrangement is also given in a classified list of books arranged in an alphabetic list of subjects. These volumes have been printed as follows:

American catalogue, author and title, 1876.
American catalogue, subject, 1876.
American catalogue, author, title, subject, 1876–80; 1880–84; 1884–90; 1890–95; 1895–1900.

Annual numbers are printed and combined every five years into one volume. The literature of almost every country has been recorded in a manner similar to that of America.

Order: When all the necessary material has been found, the slips are then arranged alphabetically by authors, and are ready for the order which is to be sent to the bookseller. The order should be made on letter-size paper, and the list of books given in tabulated form; author's surname, title, edition of year if a special edition is wanted, and publisher. No personal notes should be written on the same sheet as the order, because many booksellers keep orders and correspondence in separate files, and the order must be sent about with clerks to pick out books. A duplicate copy of every order should be kept in the library.

Receipt of Books: When the books are received, they should be checked with the order and date of receipt added. If order cards have been used, the date of receipt and cost may be added, and they may be filed to form an alphabetical index of authors of books in the library. The books are then ready to be entered in the accession book, the description of which will be given in the February number.

Home Economics

Alice Peloubet Norton

Pedagogic School

The work of the first quarter has been devoted to obtaining a general view of the food question, and gaining familiarity with the different food principles. The next quarter will be given to a study of special foods and foodstuffs. The topics discussed will be the composition and food value, the cost, digestibility, and cookery of each food material. Different methods of preservation of food, and the common adulterations, with simple tests, will be touched upon. Some work in dietetics will be given, and toward the end of the quarter methods of teaching cookery, with the subject-matter to be presented, will be discussed. During the quarter different members of the class will be asked to report on certain assigned topics.

The foods which will be studied in January are milk, cheese, butter, eggs, and meat.

References: U. S. Farmers' Bulletins: *Food, Nutritive Value and Cost,* No. 23; *Souring of Milk,* No. 29; *Meats, Composition and Cooking,* No. 34; *Fact about Milk,* No. 57; *Milk as Food,* No. 74; Richards' *Food Materials and Their Adulterations.*

Cooking in the Primary Grades

Flora J. Cooke

On account of the necessary delay in securing a properly equipped room for the simple cooking of the primary children, it has been impossible to carry out the work as outlined for this department in the COURSE OF STUDY for October, November, and December. The children have planned, made their cook books, entered their accounts and recipes in them up to date, and made a fair beginning in each phase of the work. To take up the study of a new food in January, however, would be to leave the children needlessly unsatisfied, and many of the problems which they have been working upon unsolved. For instance, they brought to school the best cooking apples that the market offered, and by cooking each in the same amount of sugar and water, they tried to decide which was really the best. This and many other questions equally interesting to them they were unable to settle during this month.

We shall, therefore, continue the work upon fruits, cereals, and sugar through January, allowing the children to discover all they can from their own standpoint under the motive of trying to serve some simple food in the best possible way to their guests at luncheon. The teacher's effort will be to direct the efforts and provide the best possible conditions for the independent work of the children.

Number: Incidentally, in the work already done, the following units of measurement have been functioned through their use: Pound, half-pound, quarter-pound, quart, pint, gill, one-half cup, one-quarter cup; eight tablespoonfuls of thin liquid equal to half-cup. Each normal child is required to do all his necessary measuring and weighing so that his results are the natural outcome of his judgment and accuracy in measurement. His own criticism of his product is the only stimulus necessary to careful work.

The recipes used during this month will be given in the next number of the COURSE OF STUDY.

Mathematics

George W. Myers

Pedagogic School

The work of the Pedagogic School will be directed toward the teaching of the continent of North America. This will be done through the aid of the following:

Exercises: 1. Estimate the length, breadth, and area of the Institute playground.

2. Measure and determine its length, breadth, and area.

3. Range out and establish an east and west

line across Lincoln Park, just north of the Academy of Sciences. As a preliminary—

a. Range out and measure at least three times a line not less than 500 feet long over level ground.

b. Range out and measure a line at least 300 feet long over rough ground, the line being obstructed by lagoons, hills, and buildings.

4. Make a preliminary topographic map of the part of the park lying south of the east and west line of Exercise 3.

a. Plot on the map the positions of buildings, monuments, lagoons, large trees, etc.

b. Draw contour lines, and represent roughly all shore lines, street lines, and buildings in proper positions with reference to the meridian.

c. Represent on the map both the geographic and magnetic meridians.

5. By a more careful survey make a more accurate map embodying the same data as above.

6. Estimate, then measure by the rough method of the plane table, and finally by more accurate surveys, the area of the suggested tract.

Applications

Obtain a large and accurate map of Illinois, containing as much detailed information as possible. From this map answer the following questions:

1. How long is Illinois in degrees and in miles?

2. How broad is it in degrees and in miles?

3. What is its area in acres and in square miles, as determined from the map?

4. What is the length and bearing of the longest line crossing the State?

5. What is the length and bearing of the line giving its greatest breadth?

6. What is the breadth of the State in degrees? What the length?

7. Using the number of degrees in the lines giving the greatest length and breadth of the State, and the number of miles in the lengths of these lines, ascertain the number of miles in one degree in each case.

8. Account for the difference in the number of miles per degree in the two cases.

9. From a contour map find the highest point of the State. The lowest point. What is the difference?

10. What would be the difference of the barometric readings at these two points?

11. From a map of North America study the same questions as are asked above for Illinois.

Astronomy

1. What is the inclination to the horizon of the solar rays in Chicago on the 1st and 15th of each month of the year at apparent noon? Answer from observation.

2. Between what limits does the inclination vary during the year?

3. What is the cause of this variation?

4. Answer Question 1 from inference for Cairo, Centralia, Peoria, Quincy, etc.

5. How do the inclinations for corresponding dates differ for the suggested places? Explain the difference.

6. How much more heat does a square meter of the earth's surface at Chicago receive in a given time on June 21st than on March 21st? Than on September 21st? Than on December 22d? Answer from observation records.

7. Answer same for Cairo from inference.

8. When is the sun's diameter, measured with the sextant, the larger, in June or in December? (The sextant and its use explained.)

9. What does this indicate as to the distances of the sun from the earth on these dates?

10. Can you determine how much more heat a given surface receives when the sun is nearest than when it is farthest away?

11. Can the varying distance of the sun from the earth account for the difference between the amounts of heat referred to in 5?

12. How is the inclination of solar rays connected with the amount of heat received from the sun?

13. Is the varying inclination of the rays capable of explaining the fluctuation in the amount of heat received in Chicago in summer and winter? Compare with answer to Question 5.

14. On what great circle of the sky is the sun always located at 6 a. m., apparent solar time? at 12 m.? at 6 p. m.?

15. How do the sunset and sunrise points move from day to day during the year? Why do they move so?

16. How would these points seem to move to an observer in southern Florida? in northern Alaska?

17. Does the sun ever shine on the north side of a building in this latitude (42° N.)? Why?

18. What would the diurnal path of the sun be to an observer on the Equator on the following dates: March 21st, April 5th, April 21st, etc., throughout the year?

19. Answer the same question for an observer on the north polar circle. On the north pole. On the south polar circle. On the south pole.

20. How long does it take the sun to move from the Washington to the San Francisco meridian?

21. Explain the system of time belts on which Standard time is based.

22. Extend your arm in the direction of the apex of the earth's way at sunrise, noon, sunset; at midnight and at intervening times.

23. If you were standing at this moment at Port Mulgrave, Alaska (Lat. 59°34'; Long. 139°46'), where would the sun seem to be at noon to-day?

24. About what is the sun's declination to-day?

25. About what is the siderial time at this instant?

26. How can you easily estimate the approximate values of the sun's declination and of siderial time for any day of the year?

27. Indicate the moon's diurnal path across the sky to-day as it would be to an observer in Chicago; in Denver; in Key West, Florida; in Port Mulgrave, Alaska. (See the American Ephemeris for moon's declination).

The Preparation and Use of Reading Leaflets in the Primary Grades

Flora J. Cooke

In the former numbers of the COURSE OF STUDY the plan of using all the appropriate reading books in the school library has been fairly discussed, but the explanation of the construction and purpose of the regular series of leaflets which are printed each month has not been fully presented. The motive of these reading lessons is to relate more closely the school experiences of the children of the First and Second Grades with the rest of their lives and make their reading react directly upon their actions. To illustrate these points one typical reading lesson has been selected to represent each month of the quarter.

We have been asked to prepare such reading lessons in advance, so that the readers of the COURSE OF STUDY may use the leaflets as supplementary reading during the same month that they are being used in the Chicago Institute, as many of them are related to the great festivals of the year, such as Thanksgiving and Christmas, and are not of as great use later in the season.

It seems impossible in many cases to do this if the reading lessons are in any way to sum up the observations of the children and are to be the outcome of their work. In such cases as the story of the first Christmas tree or the Janus myth, they can always be prepared in advance in time for use in the COURSE OF STUDY, but in the lessons on the farm, for example, it would be impossible to foresee and prepare the reading lesson at the beginning of the month. The notes on the farm and the Pilgrim reading lessons are merely suggestive, and do not represent a fixed method of work or form of expression. The effort is to use whatever form seems best adapted to arouse the desired images most economically and clearly in the children's minds.

At the end of the year these leaflets will be classified by the children and bound in book form, and become their personal property.

The farm reading lesson which is printed below is the result of a field excursion taken by children in the First Grade of Chicago Normal School in 1898.

The children of the Chicago Institute went to a farm at Lake Bluff October 2, 1900. The reading lesson summing up the experiences of that day would be quite similar to the one given here. This one is selected for the following reasons: As they read this lesson, the children will compare their own observations with those of other children at another farm in the vicinity of Chicago and note how the two farms are alike and how they are different. The fact that other children may read their stories will be an added stimulus to the desire for good form and clear expression. The necessity for the printing of such records is also made obvious in this way. This farm reading lesson was prepared in the following manner: Each of four groups of children told what they saw and what they liked best at the farm. The teacher wrote each child's summary upon the blackboard, with the help of the other children, and when they were all satisfied that they had told all they wished to, she edited the whole account as dramatically as possible, adopting the style which seemed best adapted to sustain the interest of the children. Their motive in reading this lesson after it was printed was to live over again the day and see if anything was left out, and finally, to see if they thought their mothers and the children who could not go with us would enjoy reading about the trip.

The children drew or suggested in every case whatever illustrations they thought would make the lesson clearer to the people reading it.

The use made of the reading lessons in the grades where children are only beginning reading may be illustrated in the story of the Pilgrims as follows: In its preparation, the teacher first gathered all the data possible and prepared a series of word pictures which set forth the story, or rather the special points of the story, which had been selected for emphasis in this grade. How much the children actually read of the story depended entirely upon their interest and attitude in reading it. The teacher told much of the story to the younger groups, writing such new words upon the blackboard as were to be constantly used in this work. She was careful to write these words at the time of greatest interest, so that they might be functioned by the children with as little conscious effort as possible.

When she had reached a specially interesting point, she sometimes said: "The rest of that story is here on this leaflet; find out what it says and tell us on the blackboard."

This did two things for the children:

It rested them by allowing them to be physically active, and the demand for expression required the clearest mental imagery. The teacher was careful here that the child did not at first meet too many obstacles, so that over-strain and discouragement came in. The thing considered in all cases was the child's attitude toward the reading. It has been our experience that when a real desire for reading has been awakened, the children have not been willing to stop until they have read the entire leaflet for themselves. We have found that it is time saved not to have much oral reading before this stage is reached, but to place all the effort upon making reading worth while from the child's own standpoint. In the December lesson we have only another phase of the Christmas experience, which seems to need no further explanation.

At the end of January we hope to sum up that month's work in several reading lessons, but these cannot well be printed in time for use during that month in schools outside Chicago for reasons already given. The leaflets which follow cover the subjoined topics:

1. Representative lesson for October.
2. Representative lesson for November.
3. Representative lesson for December.
4. Representative lesson for January.

Reading Lessons for the Primary Grades

SCIENCE SERIES, NO. 1

Flora J. Cooke

Reading Lesson on the Farm at Thornton

October 2, 1897, we went to visit a farm.
It was a beautiful day.
There was a deep blue sky above us, with not a cloud in it, and cool, fresh air around us.
We had bright sunshine all day long.
"The nicest day of all the year!" said Fritz.
The farm we visited is 15 miles from our school.
It is on Halsted Street.

We might have gone all the way in wagons, but that was too slow for us.
It only took us 42 minutes to go on the train.
Then we were only one mile and a half from the farm.
Big hay-wagons were waiting for us at the station.
Oh, what fun we had going to the farm!

We passed a big limestone quarry.
We wanted to see it, but we could not stop for that.
We passed some beautiful oak woods.
We wanted to gather leaves, but we could not stop for that.
We passed a great yard full of horses and colts.
We wanted to watch them, but we could not stop for that.
We passed cows and calves, goats and little pigs.
We saw old hens and chickens, and a big, proud peacock.
But we could not stop for any of these things.

They needed our horses at the farm, you see.
After a while we came to more beautiful woods.
We heard turkeys gobbling.
We saw a red brick house.
We were at the farm.

The people at the farm were very kind to us.
They came out to meet us.
They let us go everywhere.
They let us see everything.

We went first to the horse-barn.
We saw each horse go into his stall.
They were fine, large horses.
They were black, white, and brown.
Some of us liked the white one best.
Some liked the big black one best.
In each stall was a manger full of hay.
We saw the horses fed and watered.
We saw them hitched up for work.
The man showed us how he kept the horses clean.
He combed their hair with a currycomb.

One boy said, "I am glad my hair is not combed that way!"
The man showed us the hay-loft full of hay.
He showed us the oat-bin full of oats.
Then we went to the cow-barn.
The cows were out in the cow-yard that was back of the barn.
There were 25 cows in the yard.

In the barn was a little black and white calf.
It was only two days old.
Its mother was in the yard.
She kept calling it.
It always answered her.
Moo! moo! said the old cow.
Maa! maa! said the little calf.
We wanted to stay and watch him, but there were many things to see yet.

We had to go on.
We saw all the food for the cows.
There was ground corn, and oats.
There was plenty of hay and corn fodder.
Corn fodder is the dry stalks and blades of corn.
We saw the stalls where the cows were milked.
They were not like the horses' stalls.
There were no mangers in them.
There were slats to hold the cows' heads straight.
Why do people wish to hold the cows' heads straight?
We saw much straw for the cows' beds.
In summer the cows sleep out of doors.
Then we went to see the pigs.
They grunted and squealed when they saw us.
"Give us something to eat," they said.
We ground corn for them in the corn-grinder.

We fed them some of our lunches.
Still they grunted and squealed.
Pigs never seem to know when they have enough to eat.
They would eat all the time, I think.

Here is a flock of sheep.
A man drove them up the lane into this field.
They all followed their leader.
Can you see the black sheep in the picture?

Then we went to see the machines.
There was a shed full of them.
There was a ground-roller.
We rode on that a while.
There was a drill to make holes for the seeds
There was a hay-rake and corn-cutter.

There were a great many other machines, but we did not see them used.
Then it was noon.
We sat down outdoors to eat our lunches.
Some of us sat on pumpkins on the porch.
Some of us sat under the trees.
It was nice to look up at the blue sky.
We had to look out through the red and yellow leaves.
There was a large woods across from the house.
Oh, there were such pretty leaves on those trees!
The oak leaves were purple, brown, and red.
The maple leaves were bright yellow.
The pines were deep green.
After lunch we ran over into the woods.
We played games and climbed trees.
We filled baskets with acorns for Bunny, our squirrel.
We gathered pretty leaves to take home to mother.

We saw a man cut down a pine-tree.
First he cut a notch all around with his ax.
Then he cut in deeper and deeper on one side.
Down came the fine tree.
We wondered why he cut it down.
One boy said, "It 's for a Christmas tree."
Do you think it was?
Another said, "O, they want to get the pineapples."

He thought the cones were pineapples.
That was a joke. Do you know why?
We went to see the man plow a field.
It took three horses to draw the plow.
The plow-knife was round like a wheel.
It cut through the sod.
The plowshare was behind the wheel.
It was made of bright steel.
It turned the soil over.

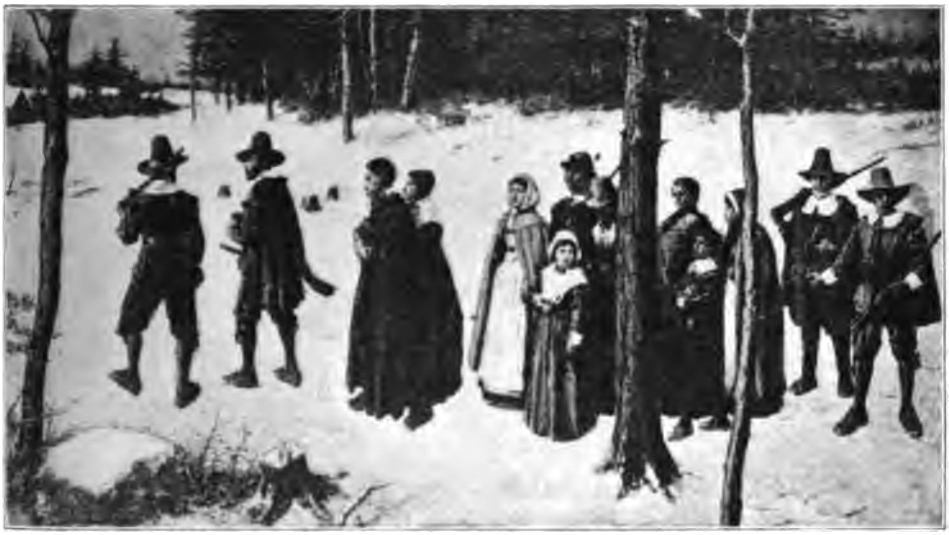
It was a long, long field, but we went to the end of it.
The soil by the house was sandy, but this soil was black.
We brought some of it home.
It is not like our garden soil.
At four o'clock we all got into the hay-wagon again.
"Good-by, pretty woods," said one girl.
"Good-by, nice farm," said another.
"Good-by, and thank you," we all said to the kind people.
Then we came home.
Was it not a pleasant day?

The Pilgrims

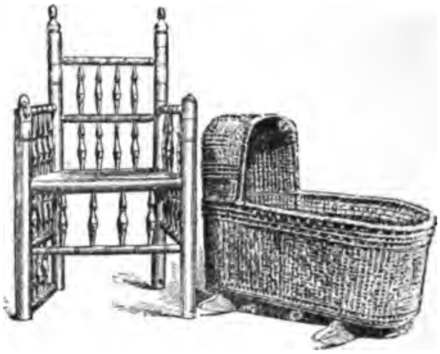
HISTORY SERIES, No. 1

The Pilgrims were a brave people.
They were good.
They wanted to do what they thought was right.
They wanted to govern themselves.
The King of England wanted them to obey him in everything.
So the Pilgrims left England.
They came across the great ocean.
They came in a sailboat called "The Mayflower."

One day a great storm came.
All the sky was dark.
The great waves dashed over the Mayflower.
A beam broke.
But the brave Pilgrims did not lose hope.
They did not turn back.
They fixed the beam with ropes.
They sailed on.



Miles Standish was the Pilgrims' captain.
He was brave and strong.
Which do you think is his picture?
Priscilla is in the picture, too.
She was very kind and brave.
She did many things for the Pilgrims.
She took care of the sick and the children.
She could spin and cook.
She could sing sweet songs.
She could tell good stories.
All the children loved Priscilla.
One day a baby was born on the Mayflower.
His name was Peregrine White.
Peregrine White looked like any other baby.
He could eat and sleep.
He could cry and crow.
He had such a queer cradle.
It is very old now, but we saw it at Plymouth.



It looked just like the picture you see here.
The Pilgrims were on the ship a long time.
There were many dangers.
The Mayflower was not a strong boat.
The great waves tossed it about.
It was very cold, and many were ill.
Often they could not tell where they were going.
At last they saw land.
It was America.
They came into a quiet bay.

They saw a great rock on the shore.
They called it Plymouth Rock.
Here is a picture of the way it looks now.
They landed here.
This was in December.
There was snow on the ground.
The Pilgrims saw bare trees and a gray sky.
They saw no houses.
They saw no people, except a few Indians.
At first the Pilgrims lived on the Mayflower.
The Pilgrim men cut down trees.
They built log houses.
The women and children helped them.

They had little to eat.
Many became ill.
It was a long, sad winter.
One day an Indian came into the village.
He said, "Welcome, Englishmen."
This Indian was Samoset.
The Pilgrims were kind to him.
They gave him beads.
They were red, blue, and yellow.
Samoset thought the beads were beautiful.

He went away, but he soon came again.
He brought Squanto with him.
Squanto was an Indian chief who had lived in England.
He could talk to the Pilgrims.
He was very kind to them.

The Pilgrims had found corn buried in the earth.
They had never seen corn before.
Squanto showed them how to plant it.
Squanto and the Pilgrims feasted together.
They were always good friends.
This made the Pilgrims much safer. Why?
The next year the Pilgrims had a great harvest.
They had warmer houses.
They had plenty of food.
They were well and happy.

The Indians were their friends.
They felt very thankful.
They said, "Let us have a great feast."
"Let us thank God for his blessings."
"Let us share our feast with the Indians."
They feasted and sang and prayed.
This was the first Thanksgiving.

The Story of the First Christmas Tree

Literature Series, No. 4

Hans and Gretchen were the children of a poor woodcutter in Germany.

Their house was small and old, but it stood in the midst of a beautiful forest.

In summer the children played in the woods all day long; they climbed the trees and made vine swings. They sailed leaf boats on the brook. They played with the small animals of the forest, and loved them. They knew where to find the first flowers in the spring and where the best wild fruit grew.

In winter, Hans and Gretchen did not always have enough to eat, but they usually had a good fire, and they were not often unhappy.

One cold Christmas Eve, after the stockings were hung, mother was telling the old story of how Christmas came to be, of the little child in the manger, the star, and the shepherds.

Suddenly, out in the forest, they heard such wonderfully beautiful music that they threw open the door in wonder. There on the steps, in the storm, blue and shivering with cold, stood a little child. They brought him quickly in and rubbed his poor little hands and feet. They warmed their breakfast porridge and fed him all he would eat. Then they gave him the very best place to sit — in mother's lap — until he fell asleep. They shared their own bed with him.

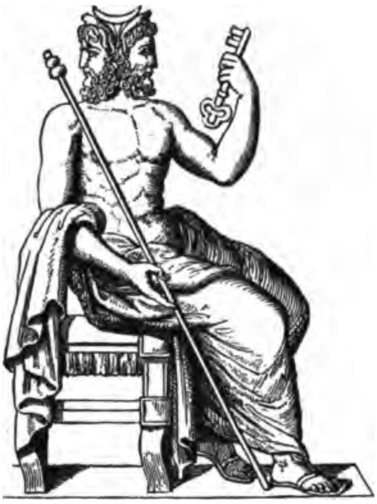
In the morning a most wonderful thing happened. Hans and Gretchen awakened, and again they heard the beautiful music.

It seemed close to their window, and when they looked out they saw, standing in the snow, the little stranger. He was clothed all in light, and many angels sang around him.

Seeing the children, he smiled and said: "When you helped the helpless you were truly helping me."

Then he laid his hand upon a young tree by the door and said:

"As a token of your loving spirit, this tree shall be ever green, and people in many lands shall hang upon its branches gifts of love and good will at Christmas time."



Story of Janus

Literature Series, No. 5

January was named for Janus, the king of the beginnings of things.

The Roman people never began anything without asking Janus to help them. They made pictures of him which looked something like the one given here.

You see he has two faces; one is old, for he is looking backward, and sees all the past; one is young, for he is looking forward to things yet to come.

He has a key in his right hand to open every year, and also to close it again at its end.

He locks it so well that no one can get into a year or out of it before the right time comes.

Janus also has a scepter; the Romans believed that he used it to control the beginnings of all kinds of work.

On the first day of January we say, "Happy New Year!" to our friends, and we truly hope to do only good things all the new year; but we do not ask Janus to help us as the Romans did. They used to burn incense and cakes and fruit, and offer sacrifices upon twelve altars to Janus at the beginning of each year. Every one promised not to begin anything without asking his help, or end anything without thanking him.

This was not always a good thing for the Romans, for if a careless boy made a mistake he need not say, "It was my own fault I made a bad beginning"; but he could say, "Janus is not willing to have me do this work; he spoiled the beginning of it."

Fortunately, the Roman children had good mothers and soldiers to help them as well as Janus.

A poet tells us that Janus' motto was: "Everything depends upon the beginning." Would you take that for a school motto? Can you make a better one?

Kindergarten

OUTLINE FOR JANUARY AND FEBRUARY, 1901.

Anne Elizabeth Allen

Subject: The balance between demand and supply.

It has been truly said that the luxuries of one generation become the necessities of the next, and it is equally as true that as luxuries become necessities we cease to think as much about the source of their supply. In the commercial world, the balance between demand and supply is kept as even as possible, and the economy so learned is most easily reduced to reason with even very small children. In these two months it will be our aim to bring before the children, objectively, the needs that winter creates, leading them to see the sources of supply and the number of people concerned in making each one of us comfortable.

Their most evident need when the cold weather comes is their clothing, which impresses them most in heavier coats and caps and the necessity for wearing some covering for the hands.

Beginning in January, then, with their winter clothing and tracing it all to the most immediate source of supply, the store, we may go still farther back, first to the manufacturer and then to the sheep. The shelter our homes afford and the special means used in them for protection against wind might be our next subject, followed by the heating and lighting, observing the different means used for keeping different buildings warm and light, and finding out which is best suited for the buildings we know.

St. Valentine's Day will be celebrated, and for several days previous to the 14th of February a part of each day will be spent in the preparation of valentines. Emphasis will be laid upon the need for neatness and good taste in the selection of colors and decoration in their manufacture, and all those made will be criticised by the children themselves as to their worthiness to be sent to friends, and as to the disposition to be made of such as do not come up to the standard.

General Topic: Our needs and their supply.

Special Topics: Clothing for winter; shelter against wind, rain, and snow; heating and lighting of buildings; reason for cold weather.

Clothing: Additional clothing for winter; tracing this clothing to the source of its supply.

Shelter: Use of walls, floors, roofs; consideration of different kinds of buildings, and their comparison; adaptation of building to function.

Heating and Lighting: Different modes of heating, such as steam, hot air, stoves, grates, gas. Necessary materials for making fires, and where obtained. Different modes of lighting—electricity, gas, lamps, candles. Most usual modes; how such lights are supplied. Cause of cold weather; observation of length of day; direction of cold wind, etc.

Songs: *Jack Frost*, Smith's Songs, Part I; *Snow-Ball Song*, Smith's Songs, Part II; *Recipe for a Valentine*, and *Jack Frost*, Gaynor Songs; *The Postman*, Knowlton's Songs; *Postman's Song on St. Valentine's Day*, Moore and Hill's Songs.

Stories: *Ted's Visit to the Fire Fairies* (published in this number of THE COURSE OF STUDY); *The Story of St. Valentine* (to appear in February number).

Games: Wind Horses; Fire Fairies; Carpenter; Jack Frost; and the dramatization of stories.

Rhythm: Skipping sidewise, and trying to interpret rhythmically any new music.

Instrumental Music: *Instrumental Characteristic Rhythms*, Part II, Clara Louise Anderson. A new book of music for use in the kindergarten, by A. D. Scammel.

Materials used: Paper and scissors for cutting pictures and patterns of clothing; clay and sand; large blocks; second, third, fourth, and fifth gifts for building houses, illustrating means of sheltering from wind, snow, or rain—first gift to illustrate movements of fire; tablets for making sides of houses, to indicate position of windows, the most openings being on the sides where the least cold wind comes from. Colored papers; tissue paper; scrap pictures and paints for the manufacture of valentines.

What Ted Saw in the Land of the Fire Fairies

The east wind was blowing the falling snow into drifts against the house, fences, and trees. Colder and colder it grew, and little Ted, who had been out playing snow-ball, suddenly burst into his grandmother's room, crying:

"Oh, I'm so cold!"

He took off coat, hat, muffler, and overshoes, stamped his feet and shook off the snow. A bright fire was roaring in the grate, and Ted lay down before it to warm himself. He began to watch the flames dancing up the chimney and disappearing into the darkness above. Picking up a stick, he lighted it and held it up the chimney, trying to see whether he could tell where the flame on the end of it went; and he was enjoying himself very much, when his grandmother called to him to put down the stick.

"Why," said Ted, "I am just playing, and want to see what becomes of the flames when they go up the chimney."

"Yes," said Grandmother, "perhaps you do; but the fire king does not allow people to play with his fairies. They are meant to do work, not to play."

"The fire king!" said Ted, as he dropped the stick into the fire; "who is he, Grandmother?"

"I've never seen him," she answered; "but he lives in the land of the fairies."

With his toes turned toward the fire, lying on his back on the warm hearth, Ted soon dropped off to dreamland, the home of the pixies and fairies.

No sooner had he reached that queer land than straight out of the roaring fire jumped a tiny little fairy clothed all in red, who said to Ted:

"The king of the fire fairies has sent for you. Will you come with me?"

Ted was up in a moment, and jumping into the fire, followed close behind the tiny little leader. The bright red road along which they traveled was very interesting. On either side was a fringe of gray moss-like ashes, and as they hurried along Ted saw the fire fairies at work by the hundreds. In one place they had a large log they were working with, which was sending up great flames and much smoke. All around the log were the blackened remains of the grass they had spoiled. In another place a beautiful house was being torn down and burned up by these little mischief-loving fellows. Again, he came to a large stove in which were many of them helping a cook get dinner ready, and warming the cold fingers and toes of a little boy and girl.

The fairy who was leading Ted went so fast that he did not have a good look at any of these things, and very soon the fairy shouted at the top of his little voice, "Look!"

Ted did look, and straight before him was a larger palace than he had ever supposed could be built.

Flames were bursting out of doors and windows, and the roar made Ted hold his ears, it was so loud.

On either side of the great front door stood a large giant whom the little fairy said were the giants Heat and Light.

Putting Ted safely on the top of a high wall, the fairy disappeared into the palace. And just at that moment a giant greater than either of the others came to the door. In a voice that sounded like thunder and shook everything around, the giant called:

"Where is the little boy I sent for?"

Ted knew then that this was the great fire king, and was frightened, but answered quickly, "Here I am!"

Then the giant said: "I have sent for you to tell you that my fire fairies are not to be played with. They never hurt any one unless they are played with and taken away from their work; then they are sure to hurt the person who disturbs them."

How frightened little Ted was as he promised faithfully never again to play with fire! He was glad when the giant, satisfied with his promise, shut the great door and disappeared, and his little guide in the bright red suit came skipping toward him, and offered to take him back home.

On the way back he found things changed. The stove was black and cold, and the people who had been warming themselves around it and getting dinner had gone away. The house was burned to the ground, and only a few sleepy fairies were showing their red coats in the gray rubbish. Where the log had been only an ash-heap remained, which the wind was carrying away. The road was no longer red, but dusty, and Ted found that he could walk much more slowly.

How tired he was! His face felt so warm, his body so stiff—and what was that noise? How much like the dinner-bell it sounded! Was that the fairy who was shaking him? A long stretch and a yawn, and his eyes flew open. There was his dear grandmother trying to get him awake.

"Did you see him, Grandmother," asked Ted.

"See whom?" she answered.

"The fire fairy," said Ted; and then began to laugh when he saw his grandmother's eyes twinkle.

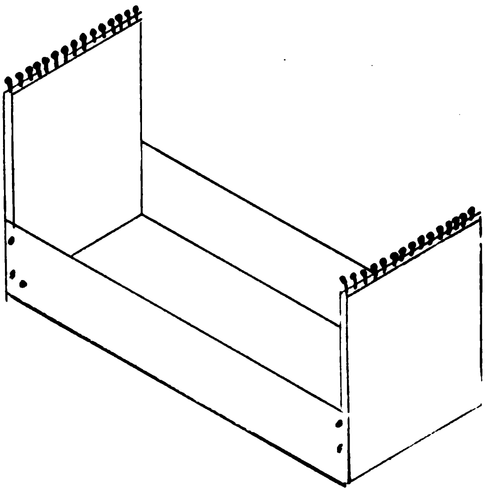
"Oh! Grandmother," said he, "I have really been to see the giant king of the fire fairies, and have seen his palace and the two giants Light and Heat that guard his door."

Anne Elizabeth Allen.

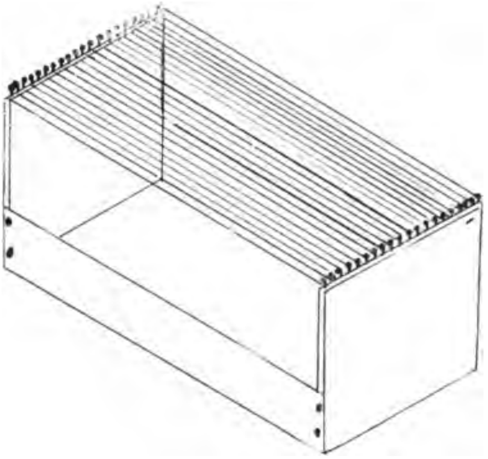
First Grade

Harriet T. B. Atwood

History: Study of home activities continued. In making the floors for the different rooms of the playhouses, the children invariably chose hardwood floors for parlor and dining-room, with the idea of using rugs. The work for January will therefore be the designing and weaving of rugs to be used in furnishing the house. The children will be encouraged to examine the various rugs in their own houses and the Navajo rugs of the school museum with the view of finding out how they are made. Each child will then weave a rug upon his loom, using cotton carpet cord for warp and coarse wool filling for woof. (For the working drawing of a simple loom which can be made in the shop by First or Second Grade children, see p. 145 of the October Course of Study.) If this is impracticable, still simpler looms can be made by putting a row of wire nails one-quarter inch apart in either end of a wooden box and partially removing the sides of the box.



The children will also examine other fabrics, dish-towels, curtains, their own clothing, ribbons, etc., and will discover that these, too, are made of woven threads.



After examining the different kinds of threads, they will experiment with the raw materials, wool, flax, cotton, and raw silk, trying actually to make threads from them.

The children will have the advantage of seeing the spinning-wheel and loom used. (See Second Grade History Outline.) If possible, a visit will be made to a factory where rugs are woven.

Literature: Stories and myths: *The Walnut Tree That Wanted to Bear Tulips*, Sara Wiltse; *Old Pipes and the Dryad*, Stockton; *Rhœcus*, adapted from Lowell; *The Building of the Canoe*, Longfellow's *Hiawatha; Myth of Arachne*, Cooke's *Nature Myths*.

Dramatic Art: I. Training in hearing and reproducing sound. Phonic games. Dramatization of *The Building of the Birch Canoe*.

II. Poems for memorizing: *Wizard Frost*, Frank Dempster Sherman; selections from *The Building of the Birch Canoe*, Longfellow.

Nature Study: I. Study of the January landscape by means of paintings and blackboard illustrations.

II. Study of wood: During December the children experimented with different kinds of stone to discover which was best for building purposes. In January they will examine various kinds of wood as to beauty, strength, and durability.

1. Each child will have specimens of wood from the trees which he has been observing, i. e., willow, oak, pine, maple, elm, and poplar. In the shop the children will cut cross, longitudinal, and quarter sections of each kind of wood. These sections will be polished and oiled, and the children will decide which they like best for the woodwork of their houses, the floors, the furniture, etc.

2. The children will then weigh specimens of uniform size of pine, oak, and maple, and decide which wood to use to make the lightest mineral box.

3. Strength tests of the different woods will be made, as follows: Specimens of uniform size and cut (perhaps ¼ in. x ¼ in. x 12 in.) will be used. Weights varying from one to fifteen pounds (bags of sand made by the children) will be hung exactly upon the middle point of the small beam of wood in a uniform way during each test.

4. After examining various painted and unpainted wood surfaces which have been exposed to the weather, the children will experiment with painted and unpainted specimens to see which takes up the most water.

After the weight and strength of the various woods has been determined, the relation of this to the amount of yearly growth will be considered.

Geography: I. Study of various kinds of forests in connection with the work in Nature Study. Use of pictures and lantern-slides.

II. Study of tropical fruits. (See outline in Geography for Second Grade.)

Art: Painting of outdoor landscape, of various wood specimens, of tropical fruits. Blackboard illustration of stories. Illustration of one of the stories, using clay.

Industrial Art: Designing of patterns for rugs. Weaving of rugs.

Reading: Simple printed descriptions of tropical fruit trees. Printed questions upon the specimens of wood. Printed dictation for cutting sections of wood. Printed reading lessons about the various useful woods and the trees from which they come. Texts of songs written upon the blackboard.

Writing, Spelling, and English: Placing of names of the different woods, the fruits studied, and all new words learned, in dictionaries. Sentences telling the results of experiments to be written on the blackboard. Placing of recipes in cook book. Writing of dimensions on all working drawings.

Correlated Number: Making of weights to be used in testing the strength of wood. Finding the middle point of wood beams. Weighing of various wood specimens. Finding and comparison of amounts of water taken up by painted and unpainted specimens of wood. Making of an accurate working drawing of the bottom, sides, ends, and partitions of the mineral box which is to be made in the shop.

Music: (MISS GOODRICH.) The music will present few new features in these grades, where many of the children are still unable to sing intervals correctly. Perfect accuracy as to pitch is secured only at certain times. Each child sings octaves, half and whole steps, and the arpeggio with great care as often as practicable—about once a week. This means, of course, very slow progress, but it proves sure as the weeks go by. These little exercises are usually taken from known songs, or those in process of acquisition. For example, the octave and third at the end of the Reinecke *Apple Tree* song, the arpeggio in the *Bogieman* (Modern Music Series, Primer), the scale-fragments in *The Elephant*, etc., proved useful and entertaining. Very great accuracy of pitch is not demanded of the so-called "tone-deaf" children, excepting during this practice. It will be found that in many cases an approximation to the tune, sung softly by the child while listening to the teacher, may be secured long before single tones can be imitated with any security. The tone-image should be allowed to develop freely, with only now and then an attempt to reach perfection. The endeavor is made to hold the mean between too great stress upon the matter of actual pitch, which only confuses and discourages the child, and a laxity which fails to secure the concentration necessary for the preservation of the ideal.

Songs: *Spin, Lassie, Spin*, Modern Music Series, First Book; *The Spider; Work and Play; January and February; Soldier Song; Bouncing Ball*, Modern Music Series, Primer; *Old Jack Frost*, Songs for Little Children, No. 2; *The Tree*, No. 3, Eleanor Smith.

School Economics: See Miss Cooke's outline for January.

Manual Training: Making of mineral boxes for holding specimens collected by the children. Preparation of wood sections from various trees studied.

Physical Training: Apparatus work. The children have learned to vault with single bar and have started pole-climbing. Following the vault will be the hurdles. They will start with one and gradually learn to leap four.

Free exercises with music: Arm exercises and leg exercises have been taken. The next step in co-ordination will be combinations of arm and leg movements.

Games: Practice in throwing large ball, also bean-bags.

References: Carpenter, *Geographical Readers;* Sara Wiltse, *Kindergarten Book;* Jackman (outline for February and March), *Nature Study and Related Subjects;* Popular Science Monthly, March, '73, *Strength of Timber;* Popular Science Monthly, November, '82, and December, '83, *Annual Growth;* Scribner's Magazine for June, '93, *Story of Logging;* Chase and Clow, *Stories of Industry;* Emily J. Rice, *Outlines in History.*

Second Grade

Harriet T. B. Atwood

History: (ANTOINETTE HOLLISTER). The Second Grade will continue the study of shepherd life, noting especially the industrial conditions of that time and comparing them with those of our own time. The following topics will be discussed:

Mat weaving with rushes and twigs. Beating bast fibers for clothing. Use of flax plant. Discovery of fiber. Making thread of fiber. Making thread of wool. Invention of primitive spindle and distaff. Use of frames for holding warp. Modification of needle into shuttle. Use of comb. Invention of harness and heddles. Gradual perfection of loom.

Flax, cotton, and hemp will be planted in boxes in the school-room and the children will watch the growth of the plants, try to discover ideal conditions for them, and use the fibers for experiments.

They will experiment also with the silk and wool as raw materials.

A friend of the school has kindly promised to use the loom and spinning-wheel for the children, and they (the children) will also visit some factory to see the way in which cloth is made by machinery.

Nature Study: I. Study of January landscape by means of paintings each week.

II. Study of wood. (For detailed outline, see Topic II in the outline of Nature Study for First Grade.)

III. Observations in meteorology. Daily observations will be made as to the sun's position at noon and its time and place of rising and setting. The slant of the noon rays will be recorded on a shadow-stick. The work is taken up at this time on account of the interest shown by the children, during December, with regard to the long winter nights of Norway.

Literature: *The Myth of Arachne*, Cooke's *Nature Myths; Old Pipes and the Dryad*, Stockton, December St. Nicholas, '76; *The Walnut Tree That Wanted to Bear Tulips*, Wiltse's *Kindergarten Book; The Birch Canoe*, Longfellow's *Hiawatha.*

Dramatic Art: I. Dramatization of portions of the *Building of the Birch Canoe*, Longfellow's *Hiawatha.* Phonic games. Training in hearing and reproducing sounds.

II. Poems to be studied and memorized: *My Shadow*, Stevenson; *Wizard Frost*, F. Dempster Sherman.

Geography: I. Study of cotton-raising, sheep-raising, flax culture, and the culture of silk-worms, by means of many pictures and stereopticon views.

II. Study of tropical fruits which we have on our tables in midwinter. (a) Observation of fresh fruits, oranges, bananas, figs, dates, lemons. (b) Visit to Lincoln Park hothouse to see tropical plants. (c) Study of the tropical landscape by means of stereopticon views.

Art: Painting of a series of pictures to show how we obtain the raw materials from which fabrics are woven. Modeling of tropical fruits. Modeling of one bas relief illustrating one of the stories or poems.

Industrial Art: Weaving of mats, baskets, etc., in connection with work in History.

Reading: *Story of the Poplar Tree*, Cooke's *Nature Myths;* printed descriptions of tropical fruit trees; printed dictation for making working drawing of mineral box; text of songs from blackboard; printed descriptions of unfamiliar trees, the wood of which is used by man, for example, ebony, teak, sandal-wood.

Correlated Number: The making of an accurate working drawing of the mineral box which is to be made in the shop. Making of weights to be used in testing the various woods. Calculation necessary in finding the comparative weights and strength of the different woods.

Writing, Spelling, and English: Placing of new words in dictionaries. Written descriptions of experiments with the different woods. Reproduction in writing of one of the stories.

Manual Training: Making of a mineral box for holding specimens collected by the children.

School Economics: (See Miss Cooke's outline.)

Physical Training: The apparatus work and games will be the same as for First Grade. Special individual exercises will be given to correct faults in standing, sitting, breathing, etc. (See First Grade outline.)

References: Starr, *First Steps in Human Progress;* Tylor, *Primitive Culture;* Morgan, *Primitive Society;* Chase and Clow, *Stories of Industry;* Sara Wiltse, *Kindergarten Book;* Carpenter, *Geographical Readers; Frye's Geography;* Coulter, *Plant Relations;* Jackman, *Nature Study and Related Subjects.*

Third and Fourth Grades

Gertrude Van Hoesen

Geography: As one of the subjects under consideration during the past month was Food, the natural question is, Where do we get all of this food? During the month of January this will be answered as far as possible by considering Chicago commercially from the standpoint of what we import.

It is only by means of excursions to those places where the food supplies are received or stored that it will be possible to obtain any idea of the immense amount of food received in Chicago every day.

1. An excursion to a large grocery department will more directly fit into the previous experience of the children. Where do all of these articles of food come from? What are the large industries represented here?

(a) Fruit, in all of its preserved forms. (b) Great dairy products. (c) Grain in all forms.

Are any of these great industries in Chicago? By means of stereopticon views, pictures, and stories lead the children to see what these industries are and what they mean to us.

2. An excursion to South Water Street will follow. How do all of these food products reach Chicago? Where do they come from? It is only by means of the stereopticon and pictures that the children can be led to image the immense orange and lemon groves, the bananas, and other tropical fruits in their natural environment, the large vegetable gardens of California, and the people engaged in their culture. What can be the reason for the ripening of fruit and vegetables during our cold months? A visit to the conservatory will answer that question.

Notice: (a), the nature of the plants in the different rooms.

(b) The temperature at which each room is kept. What must be the appearance of the landscape where the temperature is continually that of the room containing the tropical plants?

3. An excursion to the Stock Yards. Where do all of these animals come from? Pictures and stories of the great stock-raising industries of the West. What is done with the immense amount of meat prepared for use? A visit to a refrigerator car, carefully examining its facilities for transporting everything in a fresh condition, will help to answer the question. What other industries grow out of the slaughter of so many animals?

Nature Study: Examinations of foods continued.

We shall try to obtain a picture of the month by means of records kept by the children. (a) The weather chart. (b) Sunshine chart. (c) A painting of the landscape each week. (d) And the charts summarizing these observations.

Prehension of food. Comparison of the present food of the park animals with that in their wild condition. How obtained under natural conditions? Relation of structure to function.

History: Story of Leonidas as a type of a Spartan boy and hero. The story of Leonidas at the Pass of Thermopylæ presents him as a hero. With the necessary description of the Persian Wars and the picturesque details of the battle at the Pass, the children will understand and appreciate the spirit that prompted the action.

How did he come to be such a man? This can only be answered by a detailed study of Spartan education.

1. Sparta itself and its environs.
2. Spartan house.
3. The gymnasia and Leonidas' exercises.
4. The race-course.
5. The market-place and what it meant.
6. Leonidas hunting on Taygetus.
7. His dress, military drill, and public eating-place.

Lead the children to see that the one purpose of Spartan education and life was to make hardy soldiers for the state.

As far as possible, the children will be led to enter into the life of the Spartan boy, by playing his games, taking his exercises, making his house and dress, and painting scenes in his life.

The yearly games at the tomb of Leonidas will be described.

Literature: Robert Browning, *Story of Phidippides;* Mary Lamb, *The Spartan Boy;* Rudyard Kipling, *The Jungle Book;* La Fontaine, *Le Rat de Ville et le Rat de Champs.*

Number: Study of food values. Summaries of the weather charts, involving the use of whole numbers, fractions, and decimals. Planning and definitely ordering the amount of wood necessary in making the articles in the Manual Training Department.

Dramatic Art: Dramatic presentation of scenes in the life of Leonidas and Ulysses. Training in hearing and reproducing English vowel sounds continued. Poem to be studied and memorized.

Music: *Old Jack Frost,* Eleanor Smith's Songs, No. 2; *Ring Out, Wild Bells, Sea-Horses, The Brownies,* all in Modern Music Series, No. 2; *Winter Song,* Modern Music Series, No. 1; *Spinning Song,* Modern Music Series, No. 3; *Fair Snow White,* Fifty Songs for Children, Reinecke.

School Economics: Special point, care of lunch-room and desks.

Cooking: See Miss Cooke's Outline.

Textiles: The class will continue the work begun in December in the making of baskets, reeds being used for variety, instead of Indian splints. The baskets when finished will be for use in the textile room for the safe-keeping of sewing materials. The stories and pictures of Greek spinning and weaving will be better appreciated through actual experience with the wool fibers and the primitive processes of its spinning and weaving, for which reason the children will have lessons in spinning and as much as is possible for them to learn of the qualities in wool which make it easy or difficult to spin, e. g. fineness, strength, length, softness, and curl.

Fourth Grade History: (CLARA ISABEL MITCHELL.) The work outlined in History for December was set aside, and its place on the program given to hand-work, the making of Christmas presents, correlated with the History lessons of November. As the outgrowth of the children's interest in Indian life and art, they were allowed to design and make calendars of leather, ornamented with Indian patterns and pictures. Each child made a basket, also, of Indian splints, in the Indian style.

The History for January will follow the December plan, the work in weaving continuing, but in less frequent lessons.

The necessary written expression will take the form of a correspondence, which has been arranged by the geographical department of the school to take place between the Fourth Grade class and a school in Paris. In the letter written to Paris the children will tell of our own city and such part of its early history as they may agree upon as of sufficient interest to tell to children so far away.

The painting will illustrate the letters, giving pictures of the lake, the landscape coloring at different times of the year, the old Kinzie House, Fort Dearborn, and perhaps some interesting incident in the adventures of Joliet, Marquette, or LaSalle.

The work in textiles will be that suggested in December, the carding, spinning, dyeing, and weaving of wool into holders for the hot teakettle.

Geography for the Fourth Grade: Lake Michigan—what it means to Chicago.

I. The use of the lake. 1. Commerce. 2 Transportation. 3. Water. 4. Food.

II. How do the people protect these advantages?

1. Build lake-walls and breakwater piles. Why?

A visit to the shore will be necessary to enhance the images gained at the Dunes. There the children will observe:

1. The wearing and building of the waves.
2. The sand bars. Cause?
3. Discover the use of breakwater piles and piers.
4. Lighthouse. Its use. The children will

visit the lighthouse, and see how it is cared for. How are lighthouses built? Where are they built?

The story of the building of the lighthouse in *Caleb West* will be read to the children.

1. How do the Chicago people get their water from the lake? Why are the cribs placed so far out in the lake? The story of the first tunnel and crib will be told or read.

2. Why was the Drainage Canal built? Its value to Chicago.

Art: Illustrations of stories in History and Literature with clay, painting, blackboard, and charcoal. Painting of the landscape. Modeling in clay: animals in park.

Industrial Art: The children need a sewing-bag and all of its accessories, and will therefore make one.

French: The French will be entirely correlated with the Industrial Art, the Manual Training, and the Nature Study. All directions for work being given in French, the children will ask for assistance in the same language. The French literature for the month will be the dramatization of

Le Rat de Ville et le Rat des Champs.

Autrefois le rat de ville
Invita le rat des champs
D'une façon fort civile,
A des reliefs d'ortolans.

Sur un tapis de Turquie
Le couvert se trouva mis,
Je laisse à penser la vie
Que firent çes deux amis.

Le régal fut fort honnête,
Rien ne manquoit au festin,
Mais quelqu'un troubla la fête,
Pendant qu'ils étoient en train.

A la porte de la salle
Ils entendirent du bruit,
Le rat de ville détale
Son comarade le suit.

Le bruit cesse, on se retire;
Rats en campagne aussitost
Et le citadin de dire,
"Achevons tout notre rôt."

"C'est assez," dit le rustique;
"Demain vous viendrez chez moi,
Ce n'est pas que je me pique
De tous vos festins de roi;

"Mais rien ne vient m'ínterrompre,
Je mange tout à loisir;
Adieu, donc, Fi, du plaisir
Que le crainte peut corrompre!"

Fifth Grade

Willard Streeter Bass

History

The subject of the month's work will be the early history of New York. Special stress will be laid upon the study of the manners and customs, industrial conditions, and social and political institutions of the Dutch settlers. Comparisons will be drawn between the Dutch colony and the English colonies in New England and Virginia, and the pupil will be led to trace the source of their varying institutions back to fundamental differences in their character and occupations.

The geography of Holland will be studied by means of pictures and descriptions—e. g., *Hans Brinker*, Ch. II; and the long and unremitting struggle which the Dutch have waged against the ocean in order to secure and preserve their land will be made as vivid as possible.

The story of the Dutch struggle for independence will be related. The dramatic incident of the siege of Leyden will be told in detail, as it affords a striking example of the dogged courage and endurance of the Dutch, and a bold use of the peculiar geographic situation of their country. (See Motley, *Rise of the Dutch Republic*, Part IV, Ch. II.) The results of the long struggle upon the Dutch may be seen in the commercial activity and the religious tolerance which prevailed throughout Holland at the end of the sixteenth century.

The commercial activity of the Dutch, as well as their desire to sap the New World resources of Spain, led to the employment of Henry Hudson to search for a shorter trade route to the Spanish possessions. The story of his voyages will be told to the class, and the narratives of his discovery of the river which bears his name, and of the bay in which he met his tragic end, will be given with some detail. After the discovery of the Hudson River, the Dutch lost no time in establishing a trading station upon Manhattan Island. The class will study the geographical advantages of this situation (see geography outline for this month), to discover if there was any ground for the Dutch saying that the English had secured two shells in Massachusetts and Virginia, while they (the Dutch) had the oyster between them.

The Dutch West India Company was formed for the purpose of developing the trading station at New Amsterdam into a colony. Its methods were in striking contrast to those of the English, especially in its attempt to establish feudalism in the New World in the form of the "Patroon" system.

Life in the colony under the four Dutch governors will be studied from Irving's *Sketch Book* and *Knickerbocker History*. The pupils will compare the manners and customs, character and motives of the people, and their architecture and household utensils with those of the English colonists. The struggle of the people for a voice in the government will be watched, and their small success will be compared with the great achievements of the English in Massachusetts and Virginia.

The teacher will tell the story of the giving of New Amsterdam to the Duke of York by Charles II., and how the Duke made good his title by capturing the city from the Dutch. The class will form an opinion as to whether the English or Dutch had the better claim to the valley of the Hudson, why the Dutch settlers were willing to accept English rule, and whether the English had governed their colonies of Massachusetts and Virginia so much better than the Dutch that they deserved to have New Amsterdam also.

Dramatic Reading: Irving's *Rip Van Winkle* will be carefully studied and read by the class.

Written Work: Story of Henry Hudson's voyages.

Industrial Art: The weaving with a hand loom which was begun in December will be continued.

Sloyd: The construction of the colonial loom planned for earlier in the year will be begun this month. The class will examine colonial looms and pictures of them. Each pupil will be assigned the construction of a certain part of the loom, and will make a working drawing of his part before he begins work upon it.

References: Motley, *Rise of the Dutch Republic;* Old South Leaflets, No. 94, *The Discovery of the Hudson River;* Winsor, *Narrative and Critical History of America,* Vol. IV. pp. 395. Fiske, *The Dutch and Quaker Colonies in America,* Vol. I. Irving, *Knickerbocker History of New York.*

FOR CHILDREN.

Mary Mapes Dodge, *Hans Brinker;* Irving, *Rip Van Winkle, Legend of Sleepy Hollow.*

Geography

The subject for the month will be a study of the Atlantic coastal plain and its river systems. On account of its historical and commercial importance, special attention will be given to the study of the valley of the Hudson.

The general location of the Appalachian Mountains and the Atlantic coastal plain will be shown upon a sand-modeled map of North America. A sand-modeled map will then be made representing these mountains and coastal plain upon a larger scale, and showing the river-basins and regions whose history has been studied this year.

The action of rivers will be studied in the laboratory. The action of running water upon earth will be made to show (1) how the river cuts back at its source, leaving the harder portions of the soil as mountains; (2) how the river, where the current is swift, carries away earthy material, making its bed deeper and wider; (3) how the river, where the current is slow, may deposit material, making its bed shallower; (4) how the river deposits material at its mouth, forming a delta or an alluvial fan.

Pictures of characteristic landscapes in the Appalachian Mountains will be shown, and the effects of erosion there will be studied and compared with those observed in the laboratory. Pictures of the Piedmont region will then be shown, and the valleys compared with those formed in the laboratory.

The effect of the rise or fall of the land at the mouth of a river will next be studied in the laboratory. After a river has been at work for some time, the level of the water into which it discharges will be lowered. The deposit which will have formed under the water will be observed, and the pupils will try to deduce what would be the general appearance of a coast which had recently risen from the ocean. These deductions will be compared with the present appearance of the south Atlantic coast. The experiment will then be performed of drowning a river valley by raising the level of the water into which it discharges. The results will be compared to the present appearance of the Connecticut, Hudson, Delaware, Susquehanna, and other northern rivers.

The class will then undertake a special study of the Hudson to determine, if possible, the causes which have made New York the most important American seaport. They will at once see the great advantage which its fine harbor gives to the city. By consulting relief maps they will see that the Hudson, with its tributary the Mohawk, gives the most direct and easiest route to the Great Lakes and the West, and that in connection with Lake Champlain it also furnishes an easy route to Canada. Let the children try to draw conclusions from these premises regarding the commercial and military importance which must of necessity accrue to the city which the Dutch founded at the mouth of this river.

Written Work: Reports on experiments in laboratory. Reasons for commercial importance of New York.

Modeling in Sand and Chalk: Maps of North America, Atlantic Coastal Plain, and Hudson River Valley.

References: Tarr and McMurray, *North America;* Frye's, Rand and McNally's, Werner's, and Natural *Geographies;* Carpenter's Geographical Reader, *North America*, pp. 57+.

Nature Study

METEOROLOGY: The weather record, by means of the color chart and graphical thermometer and barometer records, will be continued through this month.

ASTRONOMY: The sun's slant will be observed with the skiameter as in December. The pupils will probably observe that while the sun is higher than in December, the average temperature of the month is lower. They will endeavor to find the reason for this themselves, and should be able to see that the heat stored up from last summer made December a warmer month than it otherwise would have been, and that January is to a much less degree benefited by this stored-up heat supply.

FOODS: A study of the ordinary cereal foods will be undertaken during this month. The points studied will be (1) the plants, and the part which is used for food, (2) the geographical distribution of the crops, (3) the preservation of the crop and its transportation to market, (4) the preparation of the food for the table.

Specimens of wheat, barley, oats, rye, corn, and rice as they grow upon the stalk will be shown the class. The pupils will carefully examine and compare them, and in order to clearly observe their peculiarities, will paint them. The pupils will then find out what they can about cultivation of these crops and their preparation for the market. (See reading outline below.)

The class will find from United States crop bulletins the number of bushels of each of the above grains produced in each state. A chalk-modeled map of North America will then be made, and the areas which produce the different grains will be marked with appropriately colored chalk.

The transportation of the grain from farm to market will then be considered. The crop map just described will show the routes over which the grain must be transported, and will give the pupil data from which to reason whether the transportation will be by railroad, steamer, or canal-boat. The importance of Chicago as a center of grain distribution will be considered, and the class will visit one of the large elevators and see the methods by which the grain is stored and reshipped.

The preparation of the different corn products for the table will form the basis of the work in cooking for January. Such comparison with the other cereals will be made as is suggested by the questions of the children, or as is necessary for illustration of the properties of the corn. The effect of heat on corn will be shown by popping and parching. The northern and southern use of corn will be illustrated by corn meal and hominy, and an early method of preparation will be shown in hulled corn.

Number Work: Problems like those described in the November COURSE OF STUDY will also arise from this month's weather record, and will furnish further drill in the use of fractions.

The work upon foods and the geographical distribution of crops will give rise to problems like the following:

From the number of acres of wheat, corn, rye, etc., and the number of bushels of each grain produced in a State, find the number of bushels produced per acre, and thus determine in which State the soil and climate are best adapted for the raising of each grain.

From the quantity of grain which can be grown upon an acre of land and the price of grain per bushel, determine which grain yields the greatest value per acre.

Let the pupils estimate in the laboratory the quantity of each cereal which, if used alone, would be necessary for a meal. From the price paid for the food have them determine the value of these (approximately) equal quantities of nourishment. See if there is any relation between the value of the equal quantities of nourishment and the value of each kind of grain which grows upon an acre.

Find the part, expressed as a common fraction and as a per cent, of the whole United States crop of wheat, oats, corn, etc., which is grown in Illinois.

Reading: Descriptions of the cultivation of the various grains, such as are found in Carpenter's Geographical Reader, *North America*, pp. 120-123, 159-170. Longfellow, *Song of Hiawatha*, XIII.

Written Work: Record of experiments and work in cooking.

Painting: January landscape. Stalks of the various cereals will be painted to show the structure of the plants and particularly their points of similarity and difference.

References: Jackman, *Nature Study and Related Subjects*, pp. 90-91; Chisholm, *Handbook of Commercial Geography;* U. S. Agricultural Department, *Crop Bulletins, Album of Agricultural Graphics;* Division of Chemistry, Bulletin No. 50, *Composition of Maize;* F. L. Sargent, *Corn Plants.*

Music: The Fifth Grade will be united with the Sixth for instruction in music. For outline of the month's work, see Sixth Grade.

Physical Training: The Fifth Grade will be united with the other grammar grades for gymnastics. For outline of work, see Physical Training.

German:

Vergißmeinnicht.

Ein Blümchen ſteht am Strom
Blau wie des Himmels Dom;
Und jede Welle küßt es,
Und jede auch vergißt es.

Wilhelm Arent.

Der weiße Hirſch.

Es gingen drei Jäger wohl auf die Birſch,
Sie wollten erjagen den weißen Hirſch.

Sie legten ſich unter den Tannenbaum:
Da hatten die drei einen ſeltſamen Traum.

Der erſte.

„Mir hat geträumt, ich klopf' auf den Buſch,
Da rauſchte der Hirſch heraus, huſch, huſch!"

Der zweite.

„Und als er ſprang mit der Hunde Geklaff,
Da brannt' ich ihn auf das Fell, piff, paff!"

Der dritte.

„Und als ich den Hirſch an der Erde ſah,
Da ſtieß ich luſtig ins Horn, trara!"

So lagen ſie da und ſprachen, die drei,
Da rannte der weiße Hirſch vorbei.

Und eh' die drei Jäger ihn recht geſeh'n,
Da war er davon über Tiefen und Höh'n.
Huſch, huſch! piff, paff! trara!

Ludwig Uhland.

Sixth Grade

Edith Foster Flint

History

The subject for the month is Marco Polo's city, Venice.

I. Situation of Venice: Marshy island; untillable and salt-encrusted soil; no mineral wealth; no timber; but well placed at the head of the Adriatic.

II. Effects of this physical environment:

(1) On history: (a) Island first used as refuge from the mainland at times of barbarian invasion; (b) city naturally became a maritime power, and looked toward the East: (c) city aided the Crusaders with its fleets, and reaped commercial advantages in return; (d) became a refuge for scholars and manuscripts from Greece; freedom of thought in Venice; valuable work of Venetians in preserving, editing, and translating the classics.

(2) On industries: (a) The salt trade a Venetian monopoly; (b) Commerce: Doges cleared the sea of pirates, and became "protectors of the sea." (The ceremony of wedding the Adriatic.) Trade with the East; from the Arabs the Venetians learned the manufacture of gunpowder and of glass, and from the Persians the weaving of tissues. (c) The Venetian fleet. (d) The arsenal.

(3) On building: (a) First houses of Venice were wooden huts; then as the people grew rich they were compelled to build strong stone houses for defense against the pirates; (b) influence of the East on Venetian architecture: the Venetians "made Oriental architecture their own, impressing on it the stamp of their special needs and national genius." Venetian architecture a blending of Byzantine, Moslem, Gothic, and Florentine. (c) The problems presented by the canals; canals have been deepened or filled, marshes drained, and piles driven. Two methods of building, with piles and without.

III. Famous examples of Venetian architecture: St. Mark's, Ducal Palace, Campanile. (Here pictures will be used, and the Venetian style compared with others which the children have studied and are familiar with; e. g. the Chinese, the Indian.)

IV. Venetian painting: full of color and richness. Why? How did there come to be a Venetian *school* of painting? The guilds; apprenticeship. Bellini, Lorenzo Lotto, Palma Vecchio, Giorgione, Titian, Tintoretto, Paul Veronese. (The children will see many photographs of works by these masters, and will learn from them what the spirit and interests of Venetians at that time were.)

V. The government under which all this was accomplished: An aristocratic republic; the doges at first elected by popular assembly, but later only the popular form was kept, while the spirit was purely aristocratic; the great council; the lesser council.

VI. The decline of Venetian power; the geographical discoveries of the Portuguese and Spanish a great blow.

References: F. R. Stockton, *In Florence and Venice.* (See *Personally Conducted*, p. 100-18). Same, *St. Nicholas*, v. 13, p. 349-57, 1886; J. A. Symonds, *Venetian Medley.* (See *Sketches and Studies in Italy and Greece*, v. 1, p. 254-314); H. Taine, *Venice.* (See *Italy: Florence and Venice*, p. 217-271); *Venice.* (See *The World: Its Cities and Peoples*, v. 1, p. 124-53.) *Encyclopedia Britannica.*

Geography

The subject for the month is ITALY. The children will study the country first in its relation to the rest of Europe, noting how it is cut off by the Alps, the Mediterranean, and the Adriatic. They will determine its length and average breadth from the scale on the map, compute its area, and compare with that of Illinois, of the United States, of India and of China. They will also compare its importance, past and present, with that of China, and inquire into those of its causes which are geographical. The shape of the peninsula, too, they will compare with that of the peninsula studied last month—India. Italy, as a whole, will be modeled in sand and in chalk, as well as the great natural divisions—northern Italy, the basin of the Po, and central and southern Italy. The courses of the Po, the Adige, the Arno, and the Tiber will be studied, and something learned of the famous cities along their banks. The children will also consider the—

1. Climate: (a) In the north, cold winter (10°), because of cold winds from Alps and interception of warm, damp winds from Mediterranean by Ligurian Alps. Mean winter temperature of Turin lower than that of Copenhagen. (b) In the south sugar-cane, dates, cotton, cactus, and aloes grow. (c) In the Abruzzi inhabitants often snow-bound for weeks.

2. Productions: wine, olive oil, wheat, oranges, lemons, citron, pomegranates, rice. Mulberry extensively grown and much silk produced.

3. The lakes: (a) At the foot of the Alps; their beauty; their great depth. Compare in size with Lake Michigan. (b) In central Italy, volcanic in origin, occupying the craters.

4. The volcanoes: Vesuvius as a type; volcanic action.

References: M. M. Ballou, *Italy* (see *Footprints of Travel*, p. 177-211); Robert Brown, *The Italians* (see *Peoples of the World*, v. 5, p. 234-320); Nathaniel Hawthorne, *Italy* (see passages from the *French* and *Italian Notebooks*, p. 50-506); Stanton Page, *The Chevalier of Pensieri-Vani;* Reclus, *Italy* (see *Earth and Its Inhabitants; Europe*, v. 1, p. 183-362); J. A. Symonds, *Italy* (see *Sketches and Studies in Italy and Greece*, v. 1, p. 83-344, v. 2 and v. 3, p. 1-338); H. Taine, *Italy; Rome and Naples;* H. Taine, *Italy; Florence and Venice.*

Science

The subject for the month is food, and the work of the class will be confined to the study of the food products of Italy—especially of those seeds which are used as food. In this way the work will supplement the October study of seed-distribution, will correlate with the history and geography subjects, and will be specific enough to come within the range of the children and appeal to their interest. They will first consider the common seed foods of Italy—beans, lentils, wheat, rice, and millet. Through these they will come to an inquiry into the nature and uses of starch. This starch they will obtain from wheat by putting flour into cheese-cloth and washing it. With the starch thus derived, starch-paste will be made and the iodine test applied. Then other seeds will be tested for starch. After this, starch grains from different sources will be shown under the microscope, and the effect of different degrees of heat on starch will be exhibited, with starch and cold water; starch and water at 140° F.; and starch boiled. For each temperature an examination under the microscope will be made. (The children will, of course, perform these experiments themselves in the laboratory.) Finally, the use of starch in the body will be studied, and its heat-producing nature illustrated by experiment.

The cooking for the month will be correlated throughout, and will embrace the preparation of beans, lentils, macaroni, and rice.

References: U. S. Experiment Station Bulletins, *Dietary Studies* by W. O. Atwater and others; Randolph Faries, *Practical Training for Athletics, Health, and Pleasure;* Robert Farquharson, *School Hygiene and Diseases Incidental to School Life*, 1885, p. 37-73); M. Foster, *Text-Book of Physiology;* M. Foster and L. E. Shore, *Physiology for Beginners;* William Howell, ed., *American Text-Book of Physiology;* J. E. Pilcher, *First Aid in Illness and Injury;* E. H. Richards, *Cost of Living as Modified by Sanitary Science;* E. B. Uffelman, *Manual of Domestic Hygiene of the Child;* D. Waller, *Introduction to Human Physiology;* W. M. Williams, *Chemistry of Cookery.*

Textiles: Dyeing of cotton roving (yarns) for use of First Grade children in weaving. Cotton dyes used will be those given to the school by William Matheson and Company of New York.

Music: The singing of rote-songs related in subject to the world about them and to certain topics in particular will be continued by the children of this grade. Indirect drill upon simple and beautiful tone-production will be emphasized this month more than heretofore. For example, with the work on clear enunciation which is necessary to make themselves intelligible to other people comes drill upon pure vowel quality and exact, smooth consonants, both of which are fundamentally necessary to good tone-production. Breathing exercises will be an important part of the work this month. The need of a quick, full breath in singing their rapid rote-songs is quite apparent to the children. Exercise: (1) Take quick, full breath through the slightly open lips (without lifting shoulders), filling out the line just above the waist. (2) Exhale suddenly, from the waist line. After some control of the diaphragm is attained, begin inhaling and exhaling as slowly as possible, never exhausting the lungs, and keeping a full, active chest to the end.

Sea-Horses, one of the songs for the month, has a poetic text, and the music gives the wild onward rush of waves, and the roar of the breakers as they strike the shore. It will perhaps add to the spirit of the geography work. *The Way to School* will be used for sight-reading and dictation.

Songs: *Sea-Horses; The Voyagers; Ring Out, Wild Bells; The Way to School* (all in Modern Music Series, Second Book); *Winter Song; Three Part Round* (Modern Music Series, First Book); *Spinning Song; Welcome, Wild Northeaster* (Modern Music Series, Second Book).

Number Work: Aside from the number work growing out of the subjects for the month, the children will begin to keep personal school accounts, and through this means commence the study of banking.

French: One of La Fontaine's fables will be dramatized.

Reading: Selections from *The Merchant of Venice;* Ruskin on *St. Marks; Giovanni and The Other*, by Mrs. Burnett.

Seventh Grade

Katharine M. Stilwell

History and Geography: The history and geography are so closely united in the plan of work for this grade that for the present it seems best to present the work in one outline. The pupils have already a general idea of the structure of Eurasia. This will be followed by a close study of the short slope. The details will be discussed as the scene of history shifts from country to country.

The history outline for November contained more work than could be done in the time allotted. So the subjects planned for December will be continued through the month of January.

The class has followed the Romans in their struggles for social and political adjustment; they have seen how Rome, in repelling the Gauls, preserved the Italian civilization and solved the problem of the unity of Italy.

Through this study of history they have gained some knowledge of the geography of Italy. The following points have been discussed:

1. Location.
2. Size: Extreme length; extreme width; area; area to-day; coast-line.
3. Surface: Mountains: Alps; Apennines; character and appearance of each; direction; average height; peaks, etc. Plains: location and appearance; character of coasts; harbors.
4. Drainage: Po, Arno, Tiber.
5. Climate: Temperature and rainfall as affected by the mountains; prevailing winds.
6. Occupations and productions.
7. Influence of Italian geography upon history: (a) Elements of historical significance; Apennines; slopes; Po valley. (b) Nature of influence: Difficult to defend country because of long slope; easily conquered by Rome; outlook toward west; contrast with Greece; lack of harbors; relation of mountain to plain.
8. Rome's geography and its influence: The river Tiber; the series of hills; character of the land about Rome.

The expression has been sand and chalk modeling, scenes illustrated in black and white and in color and clay modeling of Roman citizens, Gallic soldiers, etc.

As the pupils continue the history (see November and December outlines), the geography necessary to the work will be taken up in topics similar to the following outlines: *Sicily.* (First Punic war).

1. Shape, triangular.
2. Size, 9,935 square miles.
3. Surface: Limestone ridges, steep in the north, sloping toward the south; higher range in northeast of granite; Mount Ætna; volcanic; 10,800 feet high; fertile plain south of Ætna.
4. Drainage: River Symæthos; character of other streams.
5. Climate: Rain in winter, dry summers.
6. Productions: Wheat.

Spain. (Second Punic war.)

1. Location, latitude, longitude.
2. Size: Area at time of war; area to-day (190,000 square miles); extreme length, 650 miles; coast-line, 1,300 miles.
3. Surface: Lofty tablelands (1,000 to 3,000 feet); rugged and ill-watered; mountains run from east to west; Pyrenees on the north, Cantabrian in the northwest, Guadarrama in central part, Sierras Morena and Nevada in the south; deep valleys between the mountains.
4. Climate: (a) Zone of plateau, arid soil; cold in winter; hot in summer. (b) Northwest province, moist. (c) East coast, preserves the balance. (d) Sub-tropical zone of south coast hot and humid. Trace Hannibal's route through Northern Spain, across the Pyrenees, along the Rhone, across the Rhone, over the pass in the Alps to Italy.

FRANCE: (Cæsar.) 1. Location: Boundaries to-day; compare with Gaul.

2. Size to-day: Area, 205,986 square miles; coast-line, 1,600 miles.
3. Surface: Character of coasts; mountains, Pyrenees, Alps, Jura; character and peaks; height; plateaus, southeastern worn down by rivers; Cevennes Mountains, Auvergne; northeastern tableland. Plains—plain of the Rhone; the western plain, Garonne, Loire, Seine.
4. Climate; Rainfall, temperature, prevailing winds, mistral.

SWITZERLAND: (Cæsar.) 1. Location; latitude, 45°-47°; longitude, 6°-10°.

2. Size: Area, 115,992 square miles; length, 210 miles; width, 130 miles.

3. Surface: (a) Alps; Bernese, Oberland, Pennine, Lepontine, Rhœtian Alps. Appearance, peaks and passes. (b) Jura; parallel chains; limestone. (c) Tableland; average height, 1,380 feet.

4. Drainage: Rivers, lakes.

5. Climate.

6. Occupations: Agriculture, manufacturing.

THE DANUBE BASIN (conquest of the East). Austria-Hungary: 1. Location: 241,000 square miles in area.

2. Surface: Three-fourths of surface mountainous. Eastern Alps between Switzerland and the Danube. Plains of Hungary surrounded by Carpathian Mountains. Length, 880 miles; area, 22,500. Geological history of plain.

3. Drainage: Description of the Danube. The Iron Gate and its effect.

4. Climate: Temperature—why? Rainfall.

5. Occupations: Nine-tenths of surface productive. Agriculture, manufacturing.

THE BALKAN PENINSULA: 1. Location.

2. Surface; Balkan Mountains, tablelands.

3. Drainage: Danube and its tributaries.

4. Climate as affected by latitude and elevation.

5. Divisions: Formerly Illyricum and Mace, donia. At present Bulgaria, Servia, Turkey-Greece, and the Roumanian plain.

The class will obtain an image of these countries through lantern-slides and the pictures in the school collection. This image will be expanded by vivid oral descriptions, by reading, and by the correspondence plan in last month's outline. Conditions will be presented enabling the pupils, as far as possible, to reason out the resulting climate, productions, and occupations of the people. Our weather conditions here will be contrasted with those of the country under discussion and landscapes of the countries will be compared.

Writing, drawing, and painting will constantly be used as modes of expression. Maps will be modeled in sand and chalk. Longman's atlas will be used for reference.

References: Ballou, *Footprints of Travel;* Boner, *Transylvania, Its Products and Its Peoples;* Brown, *Peoples of the World;* Reclus, *Earth and Its Inhabitants;* Dunlop and Dunlop, *How We Spent the Autumn;* Hawthorne, *Passages from the French and Italian Notebooks,* p. 9–50, 506–28; Holmes, *Our Hundred Days in Europe;* Reclus, *Earth and Its Inhabitants;* De Colange, *Voyages and Travels;* Jebb, *Modern Greece;* Mahaffy, *Rambles and Studies in Greece;* Symonds, *Sketches and Studies in Greece and Italy;* Tozer, *Islands of the Ægean;* Page, *The Chevalier of Pensieri-Vani;* Taine, *Italy;* Whymper, *Scrambles Among the Alps; The World, Its Cities and Peoples;* Dennis, *Summer in Andalusia.*

Nature Study: The class will continue the work on a plan for lighting, heating, and ventilating our new school building. For details of this work, see December outline.

Number Work: Number will be used in the Nature Study as indicated in the outline. It will be used when necessary in the geography work. Problems will arise on each country similar to the following on Spain.

1. Compare the area of Spain (190,000 square miles) with the area of Italy (92,000 square miles).

2. The plain area is what part of the whole area of Spain? Compare with Italy (2,700 square miles of plains).

3. How many States the size of Illinois (56,650 square miles) can be made out of Spain?

4. What per cent of Spanish soil (Gibraltar, 1,240 acres) belongs to the English?

5. In old Iberia there are still 27,000 square miles of wooded land, only 11,600 of which are genuine forests. What part are thickets? What per cent?

6. Compare the coast-line of Spain (1,300 miles) with that of Italy. Compare the average elevation of Spain (2,300 feet) with the average elevation of Italy. Compare their highest peaks; their longest rivers.

7. What is the effect of coast-line? How many miles of coast-line to one square mile of area? Compare with Italy.

8. What per cent of the coast-line of Spain is on the Mediterranean (714 miles)? On the ocean?

9. What is the average population (17,329,-

032) to the square mile? Is this a dense population? Account for this.

10. Construct a square, the sides of which are each 5 units (inches) long, and rule it into small squares, the number of which equals the average population on twenty-five square miles in Spain, in Italy, in the United States, in the world. A population above the average in density would be called a dense population, below the average would be a sparse population. What country has the average population? What countries are densely populated? What ones are sparsely populated?

11. The length of the Ebro is equal to fifteen times the distance of its source from the ocean. Why is this?

12. Compare the Ebro with the Po in length.

13. Compare the basin of the Ebro (3,800 square miles) with the basin of the Po (29,000 square miles).

14. The average discharge of the Ebro is 3,500 cubic feet per second, while the Po discharges on an average 60,734 cubic feet per second. How do you account for this?

15. Compare the average temperature of Spain with the average temperature of Chicago for the last twenty-five years (consult U. S. Weather Bulletin).

16. Compute the yearly rainfall at Chicago. Compare this with Spain.

The work in Manual Training will require the use of geometry.

Algebra will be taken up this month. It will be taught in the closest connection with mensuration, and in accordance with the plan suggested by Mr. G. W. Myers in the December COURSE OF STUDY. Additional problems will also be found in the Eighth Grade outline in this issue.

Oral Reading: The study of Julius Cæsar will be continued.

Manual Training: In correlation with the month's work in Nature Study, the pupils will construct the model of a house. This will involve a study of the materials to be used. Tests will be applied to determine the fitness of the various woods for the necessary parts of the house. The pupils will discuss different methods of construction.

Music: The work for the Seventh and Eighth Grades will be much the same as for the Fifth and Sixth, there being slight difference in the groups in respect to ability to sing the rote-songs, and in the technical exercises required. Work in sight-reading will be done by these grades, and a large number of the simple songs in the first part of the "Primer," Modern Music Series, will be used for this purpose.

Songs: *Ring Out, Wild Bells*, Modern Music Series, Second Book; *Winter Song*, *Three Part Round* (p. 104), *Three Part Round* (p. 111), Modern Music Series, First Book; *Welcome*, *Wild Northeaster*, *In the Tempest*, *Winter and Spring*, *A Snowy Day*, Modern Music Series, Third Book; *On the Wild Rose-Tree*, Songs of Life and Nature.

Cooking: The next quarter will be spent, at the suggestion of the children, in learning to prepare and serve an Easter dinner, for their teachers. The pleasure that it will give the teachers will be used to arouse a desire in the children for a knowledge of the foods and food materials used. The children will be asked to bring in menus for the dinner, and these will be discussed in the class, with special reference to food values and cost.

Industrial Art: Textiles. The Seventh Grade will weave small rugs or mats on the school loom. They will begin the making of textile design on the squared paper, and the building of the chain.

Eighth Grade

Nott William Flint

Nature Study: I. VENTILATION AND HEATING (continued): The class will now see that a house, like the people who dwell in it, must be made to breathe, else it will prove unfriendly to human life. Also, that ventilation in most of our houses is a matter of chance, due to an ill-fitting door or window—the mistake of a carpenter.

The actual problem for ventilation which any given building presents may now be taken up, together with a study of the methods of heating.

II. An examination of the ventilating conditions in any given place will embody the following inquiries: (a) Cubic space in given room or building. (b) Size and position of outlets and inlets. (c) Distribution of air over room from inlets. (d) Amount of fresh air supplied per person per hour. (e) Examination of motive forces used to induce air movements.

NOTE.—(a) In getting cubic space of rooms the student should make corrections for all inequalities of walls, all projections into room, and all solid articles. For instance, 10 cubic feet should be allowed for a bedstead and bedding; for an adult person 3 cubic feet. (b) Size of inlets and outlets: Ventilating area of perforated bricks, or of gratings, can be found by measuring actual superficial area, and calculating relative size of interstices. In inlets, accumulations of dust should be noted; in outlets, any impediment to a free passage. In open fire-places find area of smoke flue (flue should have 16 square inches for every square foot of grate). If doors and windows are the only means of ventilating a room, what is their best adjustment? For the examination of a system of artificial ventilation, the architect's plans should be seen, if possible. (c) Direction of air currents in room may be determined easily by one of the following methods: Smoke from bit of smoldering cotton; floating fibers of floss silk, or bits of feather; candle flame (good only where current is strong). (N.B., get children to think up ways of determining currents.) Direction of air at different times and under different weather conditions. Doors and windows, if not part of the system of ventilation, should be closed during examination.

ANEMOMETER: If this instrument can be had, the exact volume and velocity of direct air currents may be determined. Note: Set anemometer well inside opening to be measured, and take time unit with watch; then multiply the resulting linear velocity by sectional area of opening.

III. The children should now work out the principles underlying the two systems of ventilation, and discuss the advantages of each.

1. Plenum: (a) Air is forced into room and building. (b) Does not suck foul air from sewers and basements. (c) Not disturbed by wind.

2. Exhaust: (a) By means of mechanical fans. (b) By heated flue or flues.

IV. Heating of houses: Each student will make a full report on the heating apparatus in his own house. (a) The open fire. (b) The close stove. (c) Hot water and steam.

Field Trip: The class will visit the Newberry Library with the special object of seeing a system of ventilation at work.

Manual Training: Some members of the class will make a model house with a glass side for the purpose of studying the principles of ventilation. N. B., A chalk box with a glass slide will do for this experiment. Cut a hole in one end and at the top. Through the hole at the top fit a common argand chimney; beneath this place a bit of candle. If a piece of smoking rag be held at the end opening, through the glass side of the box, ventilation can be seen going on.

History and Geography: (See Miss Stilwell's Seventh Grade outline.)

Mathematics: The work in Nature Study for this month is full of suggestions for number work. The computation of areas and of cubic spaces of rooms and buildings, together with the many corrections to be made for irregularities of wall and for projections into room, will give much practice in number work. In January, also, the grade will begin the study of algebra, using Professor Myer's algebra for Seventh and Eighth Grades, published in the December COURSE OF STUDY, as well as the following problems, also his:

Algebra for the Seventh and Eighth Grades: (GEORGE W. MYERS.) Algebra should not be taught as a separate subject in the grammar grades. In the writer's opinion it may, however, be studied with the greatest profit from the fifth grade upward, *if it is kept in closest connection with the work in arithmetical number*. The grade work in algebra should aim to teach:

1. The meaning of the representation of

magnitude by letters, including much of the notation and symbolism.

2. The use of the method of *mathematical induction.*

3. The significance and advantage of the equation as a concise expression of the general truths of number.

4. The first steps in the translation of symbolic statements into verbal statements and *vice versa.*

The first of these aims is best reached through the representation by letters of the lines, areas, and volumes which occur in mensuration. The second and third are secured by generalizing from a number of well-understood, concrete arithmetical problems to their algebraic analogue. The fourth is well attained by requiring the symbolized statement of the general truth before the rule is taught, the rule always being reached simply by expanding the formula into words. The following exercises are a continuation of what was begun in the December COURSE OF STUDY under the caption *Pedagogic School.* As a rule, each algebraic problem is preceded by a *single* simple arithmetical exercise, which is to be regarded as typical of such as will be readily supplied at the teacher's discretion as a basis for the algebraic generalization. Teachers are requested to try these exercises in the Fifth and Sixth grades and report results to G. W. Myers of the Chicago Institute.

45. Cut from paper a right triangle having two of its sides 1 inch long. Call one of the small angles x. Fold the paper about a line through the vertex of the right angle and the middle point of the long side. What other angle of the triangle may be called x? Referring to Example 40, can you write an equation from which you can find the value of x in degrees?

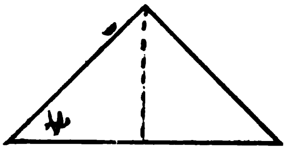


FIG. 37

46. If the short side of the triangle of Example 45 be called x and the long side y, write an equation for the perimeter and another for the area and find the values of x and y from these equations.

NOTE.—For the surface unit use the square of the linear unit in terms of which you express the sides.

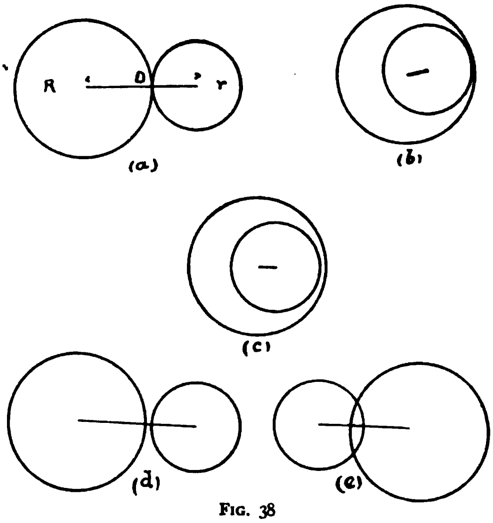


FIG. 38

47. Denote the distance between the centres of two circles by D, the radius of the larger circle by R, and of the smaller by r. Write as an equation the relation between these quantities (a) for external tangency; (b) for internal tangency; (c) for one circle wholly within the other; (d) for one wholly without the other, and (e) for the intersection (cutting) of the circles.

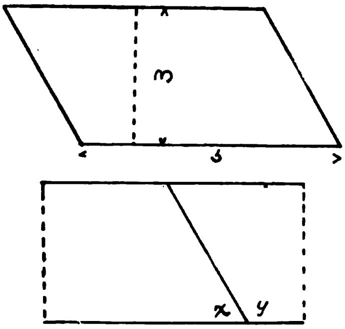


FIG. 39

48. Draw a parallelogram, and cutting it square across, turn the pieces about and fit them together as in the figure. Taking length and depth as indicated, what is the area?

49. Denoting one of the small angles of the parallelogram by x and a large one by y, by

fitting the ends over each other can you tell the sum of all the angles of the parallelogram?

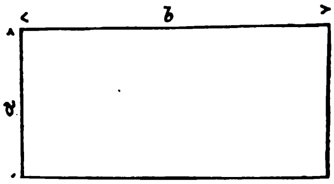


FIG. 40

50. If a carpet is 2½ feet wide, how many yards will be needed to cover the floor of a room *a* yards long by *b* yards wide? How many if the carpet is *c* feet wide?

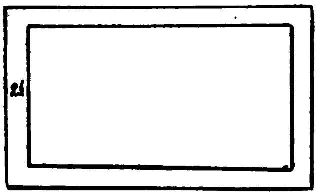


FIG. 41

51. A room is *a* feet long and *b* feet wide. How many square yards are there in a rug that covers the middle of the floor, leaving a 2½-foot strip uncovered all round the room? How many square yards if the strip is *c* yards wide?

52. What part of the oblong of Fig. 16 is: (a) A horizontal row of small squares? (b) A vertical row? (c) What part of the oblong is one small square? (d) How many small squares in a horizontal row? (e) In what other way, then, may you answer a? And b? (f) What part of the oblong is a horizontal row plus a vertical row?

NOTE.—Indicate your steps thus:

$$\tfrac{1}{3}+\tfrac{1}{7}=\tfrac{7}{21}+\tfrac{3}{21}=\frac{7+3}{7\times 3}.$$

NOTE.- -Supply a number of exercises like this, using arithmetical numbers.

53. Answer the same questions for the adjoining figure as are asked in the last exercise, indicating your steps as there directed. Make a rule which applies to the addition of any two fractions having 1 for numerators.

54. (a) What part of the oblong is two vertical rows of squares? (b) Two horizontal rows? (c) What part of the oblong is the sum of two vertical and two horizontal rows?

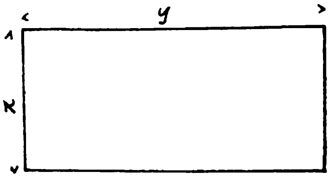


FIG. 42

NOTE.—Indicate your work thus: $\tfrac{2}{10}+\tfrac{2}{8}=2(\tfrac{1}{8}+\tfrac{1}{10})$. Give other exercises like this.

55. Answer the same questions for the adjoining figure as are asked in Exercise 54, and from your answers make a rule by which you may add quickly any two fractions having 2 for numerators.

56. Of the days of July 18% were cloudy. How many days were cloudy? How many were clear?

57. *R* per cent of the days of April were cloudy. How many days were clear?

58. Six per cent of *b* days were clear. How many days were cloudy?

59. *R* per cent of *a* days were clear. How many days were clear?

60. If *b* denote the base, *r* the rate per cent, and *p* the percentage, what law (equation) can you write connecting these numbers?

61. If *P* denote the principal, or the interest, on $1 for one year, and *I* the interest on the whole principal for the time, *t*, in years, what relation (equation) connects these numbers?

REMARK.—In every case precede the literal problem with analogous problems in arithmetical numbers.

Textiles and Fabrics: The seventh and eighth grades will weave small rugs or maps on the school loom. They will begin the making of textile designs on squared paper, and the building of the chain.

Latin: The class has been able to do more work than was planned in the December outline for the eighth grade. They will continue the reading lessons prepared for the Ninth Grade (pp. 327-329, December COURSE OF STUDY). In addition they will use the lessons printed on pages 475-481 of this number.

Music: (See Seventh Grade outline.)

Physical Training: Class practice: Series of free exercises—standing, marching, hopping, running, use of hand apparatus, elementary apparatus gymnastics, use of adjustable, horizontal, vertical, and hanging parallel bars and vaulting apparatus. Individual practice: Standing and running, broad and high jumping, rope-climbing with foot-grasp; comparison with December records at end of month. Games (indoors): basket-ball; (out-doors): hare and hounds.

The High School

Ninth and Tenth Grades

Latin: (ALLEN W. GOULD.) The pupils began with the study of the Roman school, because that topic seemed to connect itself most naturally with their own school life, and so would help to make the subject real to them. Their own experience would enable them to assimilate the Roman schools and studies. Pictures of Roman books and writing material were used to give distinctness to their ideas, and photographs of the streets and colonnades of Pompeii shown to give a local habitation to the Roman children as they came and went with their slave attendants.

The clothing followed next as a necessary detail to make the picture more complete in the mind of the child, and the evolution of clothing with the kinship of Roman toga and Indian blanket, served to give more unity to the growing idea. Pictures of statuary and vase-paintings helped to show how the garments were shaped and folded and fastened. We were fortunate this year in having at our Thanksgiving Festival a procession in costume which admirably illustrated the Roman robes, and intensified the interest of the pupils.

As each topic becomes clear to the child, he is encouraged to express it in Latin by using the idea rather than the mere words, and so the Latin sentences are to be made as answers to questions rather than as a translation of so much English into Latin.

Immediately following the study of schools and clothing come two lessons (VII and VIII), printed by mistake in the December issue. They both contain stories of school-children, and so connect themselves naturally with the interest already aroused, and carry it further by introducing two of the great Roman ideals, justice and honor. One story is that about the Faliscan school-children and Camillus, who will not do an unjust deed even to secure the capture of a hostile city. The other story is about Virginia, whose father slays his own daughter rather than see her dishonored.

Another reason for selecting this last story was the mention of the Decemviri. The pupils have already seen that the Roman boys learned the Twelve Tables of laws at their schools, as our children learn the Ten Commandments, and their attention can again be called to the profound reverence for law which the Romans had, and which made them the first great missionaries of law and order in this world.

In Lesson IX the lines from Vergil are to be memorized, one sentence after another, to help the pronunciation of the pupils and store their minds with a beautiful picture as well as accustom their ears to the rhythm of Vergil's hexameter. They are also asked to find out who Vergil was.

The second passage in IX has the ideal Roman matron once more, as a home-keeper and wool-worker, whom they have already met in their study of the way the Roman clothing was made, and will meet again in reading of Lucretia. Scipio's sarcophagus connects the Roman tombs with our own, and gives the pupil a bit of early Latin in its original shape, as a living language actually carved on the stone to describe a brave man, and so helps to make the Roman more real.

With Lesson X we take up another great debt which the world owes to Rome. The Romans were the first to build permanent and passable roads, and so bring men near to one another and spread the material and spiritual gains of every people over the whole world. The roads were the material means by which Rome set up her kingdom of law and order. The story of Lucretia connects itself with the preceding by the model matron which the students will easily guess. Then they will be asked to find Ardea and Collatia and their distance and direction from Rome; and then the question as to how the young man could ride so far in so short a time brings up the subject of roads. A consideration of the condition of our own country before the building of roads will help them to connect the primitive condition of Italy with America and all the world, and so unify their experience. The origin and meaning of the measures of "foot" and "mile" will naturally be asked, and so connect the Roman life still more with all life.

The idea of roads for riding on horseback leads naturally to carriage roads, and Lesson XI gives the picturesque story of the arrival at the Janiculum of Tarquinius Priscus and his wife. The omen of the eagle touches on religion, while the removal of the hat brings in Roman headgear, and the relatively late evolution of a hat and the function of human hair. The genesis of the wagon will be touched on and the students asked to draw the most primitive vehicle they can find described or have seen used. The pupils also locate the Janiculum and Tarquinii.

Lessons VII, VIII, X and XI are simplified from Livy, with an attempt to keep something of his style, and yet have only a few new words and forms in each story, and only such construction as the pupil may be expected to master.

The pupils had been asked to make their own dictionaries and grammars from the first, but it was found that some of them were seriously handicapped by their slowness in copying, and their difficulty in catching the sounds of the language by ear. Consequently we have made the experiment of introducing Collar and Daniell's *First Latin Book*, beginning about the middle of November.

Cæsar: (NINTH GRADE.) We found in the Ninth Grade a large number of students who had been studying Latin for one or more years in text-books based wholly on Cæsar's Gallic War. But as these students were nearly all of them unacquainted with Roman history it seemed unwise to plunge them at once into the battles of Gaul. They would have no idea of the meaning of this great struggle. They must be made to see that Rome had been trying for centuries to establish law and order in the place of battle and barbarism. Consequently these students have spent three months reading in the "Viri Romæ" the story of the Decemviri and Virginia, the capture of Rome by the Gauls, and the later battles with that race; the lives of Tiberius and Caius Gracchus with their attempts to give better law and order to the provincials; the life of Marius, with the terrible struggle once more against the barbarism of Gaul and Germany; the lives of Pompey and Lucullus, and of Cæsar down to his departure for Gaul.

Each student has also been asked to do some special reading for the class, one being responsible for Plutarch's *Marius*, another for his *Pompey*, and another for his *Sertorius*, and another for his *Cæsar*, while others have been asked to report on chapters 1-5 in Beesley's *The Gracchi, Marius and Sulla*, and chapters 1-4 in Merivale's *Triumvirates*. By the study of the physical wall-maps they have seen that the Alps and the Apennines are the two great barriers which have not always kept back the flood of vast and vigorous barbarians of Northern Europe.

As the students begin their Cæsar in January, they will be asked to make a fuller map of the scene of the Gallic wars, especially showing how the mountain ranges and the plains condition the course of the history and how the level lowlands of Germany could send their hordes of people southward and westward, and so from time to time force the flood of barbarians over the mountain barriers. Into this physical frame-work the students will be asked to fit the Gallic and Germanic ancestors of modern Europe, as described by Cæsar (Bks. I, 1, and VI, 11-24), and with such other information regarding them as the students can assimilate from Kitchin's *History of France* (Bk. I, 1-3), Duruy's *History of the Romans* (ch. 53-54), Harper's Classical Dictionary under *Gallia* and *Germania*, and the encyclopedias under *France* and *Germany*. They will be asked to compare the character and customs of these barbarians with the French and Germans they know about, to see their likeness and unlikeness, and to find out what has caused the change. They will also be helped to compare this roving and warring life with the law and order of the Romans, defective as it is, and they will be asked which of the two is more conducive to the world's welfare.

Then the students will read in Cæsar (Bk. I, 2-5) the story of the attempt of one of the roving, fighting races to leave their narrow boundaries; and they will be asked to find from their maps how the invaders can get out of Helvetia into the country to the south and west, and what measures Rome can and ought to take under the circumstances. Shall she allow the outposts of law and order to be driven in by the barbarians, or shall she extend those outposts still farther, so as to include still more of these gifted races in her great school? When they have given their own answer to this question, they go on in February to read Cæsar and find what answer he gave.

Greek: TENTH GRADE. Greek was begun this year without any text-book, the students being required to prepare their own lexicons and grammars as they needed them, and they made very rapid and satisfactory progress. But as the words and forms increased in number and complexity, it seemed fairer, for a part of the class at least, to have some book that should give them the required material without plunging them into the details of a grammar like Goodwin's or Hadley-Allen's. Consequently, Gleason and Atherton's *First Greek Book* was introduced about the middle of November. The first eight or ten chapters of this book were review to the class and were passed over rapidly. Then we took one chapter at each lesson, and had the students also read as much of our own printed lessons as they found time to prepare.

As pupils show great differences in their ability to read Greek and Latin, we have found it better to ask each one to work a certain time rather than assign the same amount of text for all. In this way the quickest pupil can have enough to do, and can help the slower by translating in the class what he or she has read. We have found it better, also, to divide the references so that different pupils shall have different subjects to study and report to the class. Even the dullest can thus have something of interest to impart to the others.

The reasons for choosing these conversations of Socrates were given last month when the lessons were printed. We wished the pupils to be put in contact with the mighty influence which Socrates came to have on all human life by his searching examinations of the most common topics, filial duty, law, education, brotherly love, and the dignity and duty of labor. How far it will be best to go in pointing out the principles of progress which Socrates revealed, we do not know until we see how far the pupils can receive these ideas. Perhaps we shall find it better to postpone the discussion of them till we reach the trial and death of Socrates, in the third year of the Greek course.

In connection with these lessons on Socrates, it was planned to have the students learn something of the historic background of Athenian life by reading week by week a brief account of the Persian wars, as found in the easy Greek of Moss's *First Greek Reader*. We shall try the plan of having each student responsible for a different part of the story, though all the class will be expected to follow his translation, so that they will all master the whole story. They will also be expected to follow the story with maps of the places and plans of the battles.

In addition to the references given in the December issue, we shall ask the student to follow the story of the Persian wars in some one of the larger histories of Greece, like Grote's, Curtius', or Duruy's, holding each student responsible for only one of these books. In this way we hope to help the students to acquire the habit of going to the best books for information, and also of watching the reports of the other students to see if there is anything for him to supplement or modify. This method, as applied in some of the Latin classes, has already resulted in several lively discussions between the pupils, making ancient topics very much alive.

Our Thanksgiving Festival included a Greek procession, which served as an admirable prelude to the subject of Greek clothing, to which Socrates refers in one of the talks to be read this month.

Latin Lessons for Ninth Grade

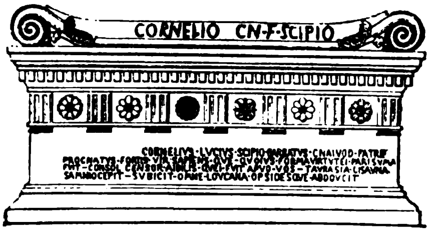
NUMBER III

Latin IX

1. Polyphemus Serenades a Mermaid.

Huc ades, O Galatea; quis est nam ludus in undis?
Hic ver purpureum, varios hic flumina circum
fundit humus flores, hic candida populus antro
imminet, et lentæ texunt umbracula vites.
Huc ades! insani feriant sine litora fluctus.
Vergilius.

2. The Epitaph of a Fair Roman.



No. 112. SEPULCRUM SCIPIONIS.
A Tomb in Rome.

Hospes, quod dico paulum est, adsta ac perlege.
Hic est sepulcrum hau pulchrum pulchræ feminæ:
nomen parentes nominārunt Claudiam;
suum maritum corde dilexit suo:
natos duos creavit: horunc alterum
in terrā linquit, alium sub terrā locat.
Sermone lepido tum autem incessu commodo
domum servavit, lanam fēcit. Dixi, abi.

Vocabulary of New Words

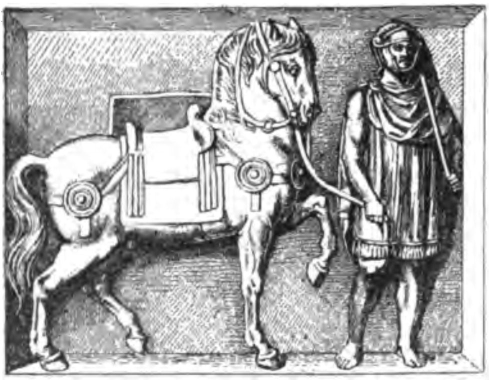
unda, ae, *wave, water.*
ver, veris, *spring-time.*
varius, a, um, *varied, many-colored.*
flumen, inis, n., *river.*
circum, *around.*
fundo, 3, *pour forth.*
humus, i, *ground, earth.*
flos, floris, *flower, blossom.*
populus, i, f., *poplar tree.*
antrum, i, *cave, grotto.*
lentus, a, um, *tenacious, clinging, twining.*
umbraculum, i, *shady bower.*

vitis, is, *vine.*
insānus, a, um, *mad.*
ferio, 4, *strike.*
sino, 3, *allow.*
litus, oris, *shore.*
fluctus, *wave, tide.*
hospes, itis, *host, guest, stranger.*
paulus, a, um, *small, little.*
adsto, 1, *stand by.*
sepulchrum, i, *tomb.*
hau == non
pulcher, chra, chrum, *beautiful.*
nomen, inis, n., *name.*
nomino, 1, *give a name, call.*
marītus, i, *husband.*
cor, cordis, n., *heart.*
natus, *son.*
creo, 1, *produce, bear.*
terra, ae, *earth.*
linquo, 3, *leave.*
loco, 1, *place.*
sermo, onis, *conversation, speech.*
lepidus, a, um, *charming, witty.*
incessus, *walk, bearing.*
commodus, a, um, *fitting, agreeable.*
servo, 1, *guard, keep.*

References: Harper's *Dictionary of Classical Literature and Antiquities*, under *Galatea, Polyphemus, Sarcophagus;* Guhl and Koner's *Life of the Greeks and Romans*, Sec. 77.

Latin X

A Long Ride



No. 113. EQUES ROMANUS.
From a Tombstone in Mayence.

Tarquinius Superbus, rex Romānus, Ardeam obsidēbat, ubi regii invenes qui in castris erant conviis interdum tempus terēbant. Forte cenantibus apud Sextum Tarquinium incidit de uxoribus mentio, et suam quisque laudābat miris modis. Inde Tarquinius Collatīnus dixit: "Verbis non opus est. Paucis horis scire possumus ceteris præstāre Lucretiam meam. Quin conscendimus equos visimusque præsentes nostrarum ingenia?"

"Age sanē!" dixērunt omnes.

Itaque citātis equis Romam vehuntur et regias nurus convivio vident tempus terentes. Pergunt inde Collatiam ubi Lucretiam, Collatīni uxorem, serā nocte inter ancillas lanam facientem inveniunt.

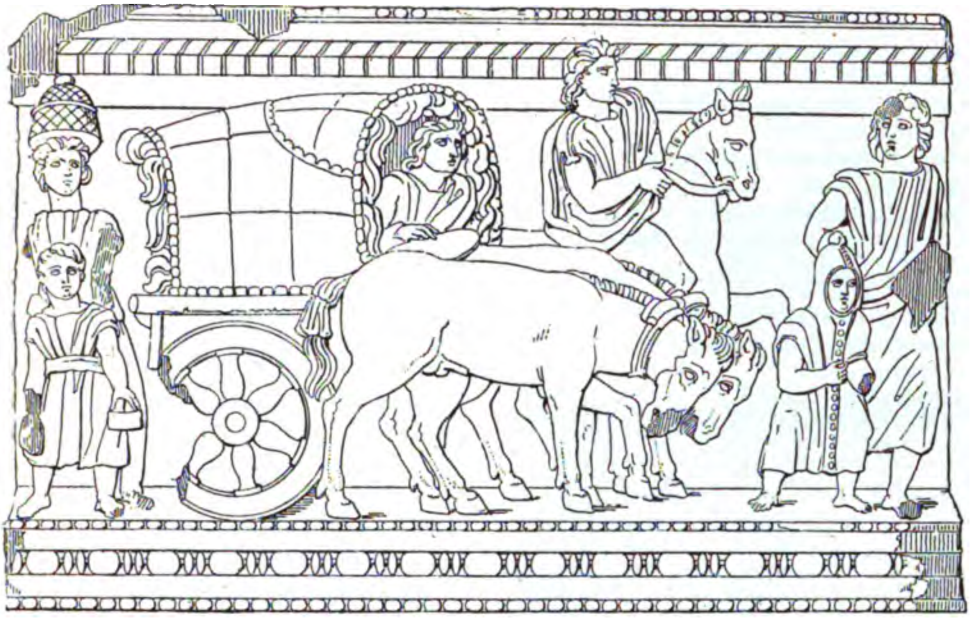
Vocabulary of New Words

rex, regis, *king.*
regius, a, um, *royal*
invenis, *young, youth.*
convivium, *banquet.*
tempus, oris, *time.*
tero, 3, *rub, wear away, spend.*
fors, fortis, *chance.*
ceno, 1, *dine.*
apud, prep., *with, at, at the house of.*
incido, 3, *fall in, happen.*
laudo, 1, *praise.*
mirus, a, um, *wonderful.*
verbum, i, *word.*
opus, eris, *work, need.*
scio, 4, *know.*
præsto, 1, *stand before, surpass.*
conscendo, 3, *mount.*
ingenium, *nature, character.*
citātus, a, um, *quick, at full speed.*
nurus, *daughter-in-law.*
pergo, 3, *press on.*
ancilla, *hand-maiden.*

Questions to be Answered in Latin

1. Quid dixit Collatīnus de uxore suā?
2. Quo modo iuvenes regii Romam ivērunt?
3. Quot fere horis equis citātis ab Ardeā Romam ire potuērunt?
4. Quot horis a Romā Collatiam ire potuērunt?
5. Quā fere horā Collatiam venērunt?
6. Quid faciebat Lucretia?

References: Harper's *Dictionary of Classical Literature and Antiquities*, under *Ephip-*



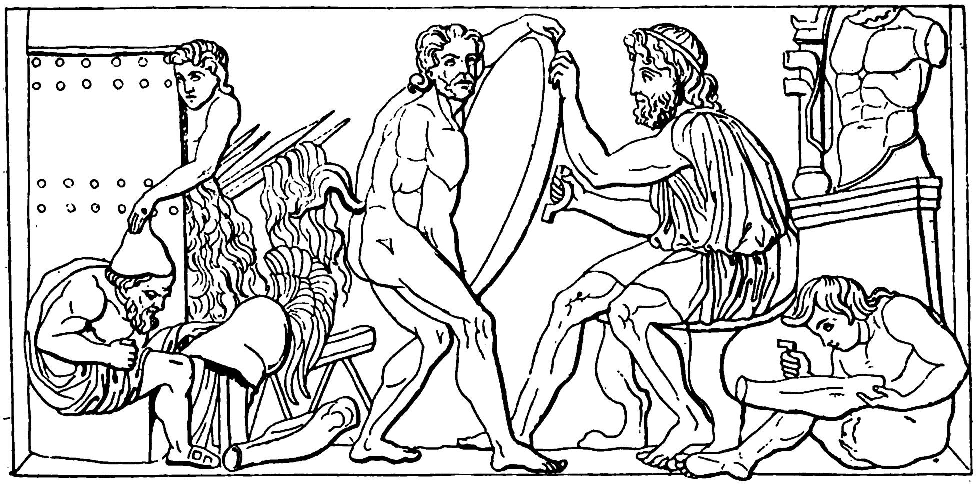
No. 114. VIATOR IN CARPENTO SEDENS.
From an Etruscan Relief.

pium; Rich, *Dictionary of Roman and Greek Antiquities*, under *Eques;* Smith's *Dictionary of Greek and Roman Geography*, under *Ardea, Collatia.*

Latin XI

A Lucky Omen

L. Tarquinius Priscus ab Tarquiniis cum fortunis omnibus Romam migrāvit. Postquam ad Ianiculum vēnit ei carpento cum uxore sedenti aquila pilleum aufert superque carpentum cum magno clangōre volitans rursus capiti apte repōnit. Tanaquil uxor, cælestium prodigiōrum perīta, alta sperāre virum iubet, qui postea regnum occupāvit.



No. 115. PUER PILLEUM FABRI AUFERT.
Hephaestus' Blacksmith Shop on a Greek Vase.

Vocabulary of New Words

migro, 1, *move, remove.*
aquila, *eagle.*
anfero, 3, *take away, carry off.*
clangor, ōris, *noise.*
volito, 1, *fly to and fro, flutter.*
caput, itis, *head.*
repōno, 3, *replace.*
perītus, a, um, *experienced, expert.*
altus, a, um, *high, lofty.*
spero, 1, *hope for, expect.*
iubeo, 2, *command, bid.*
regnum, *royal power.*
occupo, 1, *seize.*

Questions to be Answered in Latin

1. Ubi habitābat Tarquinius Priscus?
2. Quo modo migravit Romam?
3. Quid fecit aquila?
4. Quid dixit Tanaquil?
5. Hominesne in urbe Romā carpento vehebantur?

References: Harper's *Dictionary of Classical Literature and Antiquities*, under *Tarquinii, Tarquinius, Carpentum, pilleus;* Rich, *Dictionary of Roman and Greek Antiquities*, under *Carpentum, pileus;* Schreiber's *Atlas of Classical Antiquities*, Plate 62.

Latin XII

The Roman Women Help the State

Camillus dum Veios obsidet decimam partem prædæ Apollini vōvit. Sed urbe captā vōtum exsolvere Romani non potuērunt quia aurum satis non habuērunt. Deinde matrōnæ ad id consultandum convenērunt communique decrēto aurum et omnia ornamenta sua in ærarium detulērunt. Itaque ob eam munificentiam matrōnis pilento ad sacra ludosque, carpentis festo profestoque ire licuit.

Nunc mihi curto
Ire licet mulo vel si libet usque Tarentum.
—*Horatius.*

Vocabulary of New Words

decimus, a, um, *tenth.*
præda, *booty.*
voveo, 2, *vow;* vōtum, *a vow.*
exsolvo, 3, *pay off.*
convenio, 4, *come together.*
decrētum, *decision.*
ærarium, *treasury.*
defero, 3, detuli, *carry down, carried down.*
munificentia, *liberality.*
licet, *is allowed.*

No. 116. VIATOR CANPONÆ PRO CIBO SOMNOQUE PECUNIAM DAT.
From a Tombstone in Italy.

Questions to be Answered in Latin

1. Quid fēcit Camillus dum Veios obsidet?
2. Cur Romani votum non exsolvērunt?
3. Quid fecērunt matronæ?
4. Quem honorem eis dedit senatus?
5. Quo modo ferebantur aliæ feminæ in urbe Romā?
6. Quo modo Horatius poeta usque Tarentum ire potuit?
7. Quot diēbus Tarentum ire potuit?
8. Ubi potuit viator cibum somnumque capere?
9. Qui primus viam publicam munīvit?

No. 117. VIA APPIA.
From Guhl and Koner's Life of the Greeks and Romans.

References: Harper's *Dictionary of Classical Literature and Antiquities*, under *Veii, Apollo, Ludi, Caupōna, Via;* Rich, *Dictionary of Roman and Greek Antiquities*, under *Pilentum, Via;* Guhl and Koner's *Life of the Greeks and Romans*, Secs. 104, 105 and 71.

Latin Lessons for Ninth Grade

NUMBER IV

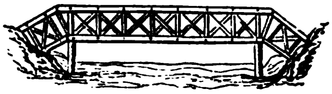
Latin XIII

Horatius at the Bridge

Ancus Martius, rex Romanōrum, Ianiculum urbi ponte sublicio coniunxit, qui postquam reges expulsi sunt iter pæne hostibus dedit. Nam Porsena Clusīnus rex repentīno impetu Ianiculum cēpit et infesto exercitu ad pontem vēnit, cuius extrēmam partem Horatius Cocles unus occupāvit. Is vir hostium impetum sustinuit dum pons a tergo interrumpitur. Tum ponte interrupto Cocles, "Tiberine pater," inquit, "te precor, hæc arma et hunc militem propitio flumine accipias." Ita sic armatus in Tiberim desiluit incolumisque ad suos tranavit.

Vocabulary of New Words

coniungo, 3, *unite.*
iter, itineris, *route, way.*
hostis, is, *enemy.*
repentīnus, a, um, *sudden.*
impetus, *attack.*
infestus, a, um, *hostile.*
interrumpo, 3, *break down.*
precor, 1, *pray.*
flumen, inis, *stream.*
desilio, 4, *leap down.*
incolumis, *safe.*
trano, 1, *swim across.*



No. 118. PONS SUBLICIUS.
From the Column of Antoninus.

Questions to be Answered in Latin

1. Qui primus pontem sublicium fēcit?
2. Quibus hostibus iter pæne dedit is pons?
3. Qui sustinuit impetum hostium?
4. Quid dixit Cocles Tiberino patri?
5. Quo modo Cocles ad suos venit?
6. Potuitne populus Romanus sine pontibus viisque imperium suum constituere?

No. 119. PONS ÆLIUS.
The Ponte S. Angelo, from Guhl and Koner's Life of the Greeks and Romans.

References: Harper's *Dictionary of Classical Literature and Antiquities*, under *Cocles, Clusium, Porsena, Pons, Via;* Rich, *Dictionary of Roman and Greek Antiquities*, under *Pons, Sublicius, Via;* Guhl and Koner's *Life of the Greeks and Romans*, Secs. 71 and 72; Macaulay's *Horatius.*

Latin XIV

A Recreant Roman Maiden

Sabini Romulo regnante arcem Romanam obsēdērunt, cui Tarpeius præerat, et Tarpeia, filia sua, dum aquam extra mœnia petit armillas aureas gemmatosque anulos vidit quos Sabini in bracchiis lævis gerebant. Eorum ornamentorum avida puella Romana dixit Sabinis, "Si id dabitis quod in bracchiis lævis geritis, vos in Capitolium ducam." Sed ubi in arcem ivērunt puellam scutis obruerunt quia et illa in lævis gerebant.

Dominus servum iubet:

Tu qui urnam habes, aquam ingere, face plenum aënum sit cito. *Plautus.*

No. 120. AQUA CLAUDIA.
A Roman Aqueduct To-day, from Duruy's History of the Romans.

No. 121. PUELLÆ GRÆCÆ URNAS FERENTES.
From a Greek Vase.

Vocabulary of New Words

regno, 1, *reign, rule.*
arx, arcis, *citadel.*
præsum, *be in front, be in command.*
extra, prep. with acc., *outside.*
mœnia, ium, *fortifications, walls.*
peto, 3, *seek.*
armilla, æ, *bracelet.*
anulus, i, *ring.*
lævus, a, um, *left.*
avidus, a, um, *eager for.*
scutum, i, *shield.*
aënum, i, *copper vessel.*

Questions to be Answered in Latin

1. Ubi petivit Tarpeia aquam?
2. Quo modo eam ferebat?
3. Quorum ornamentorum avida fuit puella?
4. Qua arma ei dabant Sabini?
5. Ubi petēbant servi aquam postquam ea in urbem ducta est?
6. Qui primus aquam in urbem duxit?

References: Harper's *Dictionary of Classical Literature and Antiquities*, under *Aquæ Ductus, Fons, Tarpeia;* Guhl and Koner's *Life of the Greeks and Romans*, Sec. 74; Schreiber's *Atlas of Classical Antiquities*, Plate 67 and 68.

Physiography: Ninth Grade (WALLACE W. ATWOOD.) — During the fall quarter the work in this course was a study of the geographic environment of Chicago. Whatever was done in the class-room was based on the field study carried on during the early part of the quarter, with the aim of having the students understand and appreciate what was going on about them.

These same students are studying Grecian history and the Latin language, and therefore it is desirable that they have an appreciation of the physiographic conditions in those regions where the Greek and Roman civilizations developed.

For this reason the attention of the class, in this course, will be focused on the physiography of the Mediterranean Sea region, including not only a study of the physical geography of the land, but a consideration of the climatic and hydrographic conditions in that part of the world.

The general geography has been covered, somewhat fully, with the students of this grade, in the other courses, and our investigations will begin with a study of the climate:

I. Elements of climate, or what we want to know about the climate of any region.

1. Temperature: (a) Average. (b) Average yearly range. (c) Average daily range (d) Average during the growing period. (e) Average during cold period. (f) Secure similar data for Greece and Italy.
2. Rainfall: (a) Total annual amount. (b) Distribution throughout the year. (c) Distribution over surface. (d) Rainfall for Greece and Italy.
3. Winds: (a) Prevailing winds, direction and average velocity. (b) Periodic winds, direction and average velocity. (c) Special storm winds. (d) Winds for Greece and Italy.

II. Factors which influence climate.

1. Latitude.
2. Altitude.
3. Relation to sea: (a) Distance from sea. (b) Where there are warm currents. (c) Where there are cold currents. (d) Relation of Greece and Italy to sea.
4. Relation to physical features: (a) On windward or leeward side of high mountains. (b) On windward or leeward side of great plains or deserts. (c) Windward and leeward sides of Greece and Italy during different seasons.
5. Position relative to wind belts or storm tracts. Special changes in southern Europe during the year.

III. Keeping of weather records.

1. The Thermometer: (a) Fahrenheit. (b) Centigrade. (c) The fixed points and how to determine them. (d) Comparison of degrees. (e) Special thermometers for extremes of temperature. (f) Maximum and minimum thermometers. (g) The thermograph.
2. The Barometer: (a) Making of the barometer. History of the experiment. (b) Aneroid barometers.
3. Anemometers.
4. The Rain-gauge.

5. Recognition of different cloud forms: (a) Cirrus. (b) Cirro-stratus. (c) Cirro-cumulus. (d) Alto-stratus. (e) Stratus. (f) Cumulus. (g) Alto-cumulus. (h) Nimbus. (i) Cumulo-nimbus.

IV. The weather map.

1. The isobars.
2. The isotherms.
3. The devices for showing on the map, clear or cloudy conditions, rain or snow, direction of wind.
4. The areas marked "Low": (a) Arrangement of pressure. (b) Arrangement of temperature. (c) Arrangement of winds.
5. The areas marked "High": Same analysis as for "Low."
6. Weather conditions in "Low" and in "High."

V. Circulation of the atmosphere.

1. Observations based on wind charts: (a) The calm belts. (b) The trade wind belts. (c) The belts of westerlies. (d) The low-pressure belts. (e) The high-pressure belts. (f) Countries located in these different belts. (g) In which belt is Greece? In which belt is Italy?
2. Explanation of these facts.
3. Some more observations: (a) Monsoon winds. (b) Land and sea breezes. (c) Cyclonic winds. (d) Anticyclonic winds. (e) Typhoons. (f) Tornadoes. (g) Hurricanes. (h) Chinooks. (i) Northers. (j) Countries located where these periodic winds blow. (k) Storms of southern Europe.
4. Explanation of these observations.
5. Influence of the storms on mankind.

References: Davis, *Physical Geography;* Tarr, *First Book in Physical Geography;* Davis, *Elementary Meteorology;* Waldo, *Meteorology.* The Government weather maps.

Art Expression Work in Physiography: NINTH GRADE: I. Water-color paintings of various cloud forms.

II. Water-color paintings of various landscapes typical of:

1. Arid or desert region.
2. Prairies.
3. Steppes.
4. Tundras.
5. Well-watered mountain-sides.
6. Poorly watered mountain-sides.
7. Forests of temperate zones.
8. Tropical forests.

III. Chalk modeling of landscapes similar to those chosen for painting.

History: (GUDRUN THORNE-THOMSEN.) The work in History in Ninth, Tenth, and Eleventh Grades for the months of January and February will be a continuation of the course outlined for December, and will cover the period in Greek history following the Homeric Age and extending to the Persian wars.

Particular attention will be given to the evolution of government and the growth of institutions both social and political as they gradually unfolded themselves during this period from their beginnings in prehistoric times. The different forms of government will be studied in their relation to the life of the people, as an expression of social ideals and tendencies; e. g., in Athens, where the struggle toward democracy reflected the whole social organization and progress of the city.

For the study of the topics outlined below the pupils will be referred to chapters in their text-book, Botsford, *A History of Greece*, as well as to books in the library (see list of references in December outline). These topics will be taken up in a logical or chronological order, as suggested by the text-book, only in so far as it agrees with the progress and needs of the class at the time; they do not present the whole scope of the work, but rather the essential points around which the discussion will center. Facts concerning the period will be obtained from books, but generalizations, inferences, and estimates of persons and events will be worked out by the pupils themselves.

In order better to understand the powers of the various political bodies, the class will organize itself into a monarchy, oligarchy, or democracy, as the case may be. Lawsuits may be brought before the courts and new laws proposed, the pupils endeavoring to dramatize the scenes as they actually took place.

To make the picture of the life of the

Greeks vivid, we shall imagine ourselves in Sparta or Athens and see the people in their daily pursuits dressed in the costumes of the time. We shall go to the market-place and listen to the talk of the townsmen; visit the courts, and also the town hall where the sacred fire is burning; attend the meetings of the council and the assembly; and in general watch the life of the Athenian or Spartan at home and in public places. At the harbor of Athens, the vessels as they come in and go out will give us an idea of the commerce of the city. We shall go on board one of these vessels and set sail for some of the distant colonies. In the schools we shall see what the children and youths are doing, and in the temples learn of the religious worship of the people. From what we see we shall make inferences concerning the government of the city and endeavor to trace its development.

In this study the following outline is suggested:

What determines the formation of the Greek state? The city as the political unit in Greece. The evolution and organization of the city state. The cohesive force in early Greek society, religious worship, and kinship. The walled city and its relation to surrounding country. Comparison between our modern state and the Greek. Geographical conditions favoring the formation of city states. Function of the king in early Greek society. Rights of the king limited by the council, showing position and power of the nobility. Limited by the assembly, showing political rights of the masses. Limited by traditional customs.

Compare Greek monarchies with despotic monarchies of the East.

The pupils will work out a map showing extent of the Greek world. Founding of colonies; reasons for colonization, commercial, political, etc. Relation of colonies to parent city; organization of a colony; Greek method of colonization compared with that of modern countries. Influence of Greek colonization on the progress and civilization of the world.

Was Hellas a geographical unit? A political unit? Difficulties in the way of political federation. Why was the local interest of the Greek city state so strong? Reference to the geography of Greece.

Present physical map of Greece, showing isolated areas; diversity in resources and occupations, and consequent variety of interest of the city states.

Co-operation of states for religious purposes: (a) The Delian League; (b) The Delphic Amphictyony. How religious leagues became political hegemony. The Peloponnesian League. Compare this loose union of states with the United States. What made the states of Greece with their colonies feel like one nation? Elements of Hellenic unity. Language and literature. The Homeric poems. Common religion. Religious festivals; the Delphic oracle; Olympic games. Customs, manners, culture, and art. Stage of civilization reached by surrounding peoples (barbarians).

ATHENS: Myths concerning the beginnings of the city. How Attica became a state; its organization and the influence of Athens. Geography of Attica. Importance of Acropolis in early times. Steps in the evolution of the government of Athens from monarchy to democracy. Efforts of the nobles to reduce king's power. Knightly aristocracy or oligarchy. Transition from oligarchy to timocracy. Division of people into four classes. Political power determined by wealth. Party strife. Sectional classes of Athens. The nobles as custodians of laws. Draco's work for Athens. His laws of homicide.

Growth of commerce and industries. Economic misery of the lower classes. The legislation of Solon. Changes in the constitution.

Rights of the political parties under Solon. Did the constitutional reforms of Solon bring about a democracy? What class had still the controlling power in Athens? Solon's own account of his work. Compare political institutions of Athens with those in our own country.

Pisistratus, the tyrant. Benefits conferred on the Greek commonwealth by the tyrannies. Advantages to the Greek people of gradual transition from oligarchy to democracy. Difference between king and tyrant. Pisistratus' work for Athens. Growing appreciation of Solon's constitution by the masses.

Clisthenes as the founder of democracy in Athens. Constitutional reforms introduced by Clisthenes. Public work without compensation; consequences. Effect of these reforms on the people of Athens as shown in succeeding events.

SPARTA. Myths concerning beginnings of the city; the Dorian migrations. Relation of Spartans to conquered people. Compare with Athens. Political rights of outside country. The three classes.

The position of the Spartans in Lacedæmon was like that of a garrison in a hostile country; the whole social and political structure was adapted accordingly, and war became the business of life. Entire subordination of the individual and the family to the state. How the state provided for the individual. Cultivation of the land by the helots. Aims and methods of Spartan education. Political organization. The dual kingship. Power of the kings of the council and assembly. The five ephors. Sparta as an aristocracy. In what sense was it a democracy?

As Sparta and Athens represent entirely different ideals in government, a close comparison between the two cities will be made. Influence of the two cities upon Greece. Communistic organization of Spartan society. Individualistic organization of Athenian society. Effect on material progress and attitude toward work in the two states.

Art in Connection with History: (JOHN DUNCAN.) Taking the Mycenæan pottery as the inspiration, the students of the First, Second, and Third years will mold and decorate vases, candlesticks, flower-pots, and jardinières. The students will first be familiarized with the form of pottery belonging to that age through the medium of pictures and slides, and will then proceed to adapt them to their own uses, and to invent new patterns for themselves.

German:

Die Loreley.

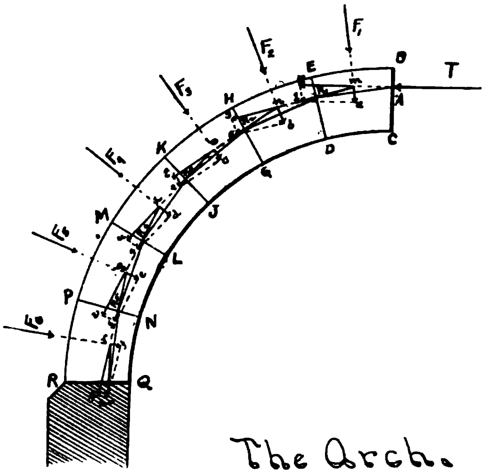
Ich weiß nicht, was ſoll es bedeuten,
Daß ich ſo traurig bin;
Ein Märchen aus uralten Zeiten,
Das kommt mir nicht aus dem Sinn.
Die Luft iſt kühl, und es dunkelt,
Und ruhig fließet der Rhein;
Der Gipfel des Berges funkelt
Im Abendſonnenſchein.

Die ſchönſte Jungfrau ſitzet
Dort oben wunderbar;
Ihr gold'nes Geſchmeide blitzet,
Sie kämmt ihr goldenes Haar.
Sie kämmt es mit goldenem Kamme
Und ſingt ein Lied dabei,
Das hat eine wunderſame,
Gewalt'ge Melodei.

Den Schiffer im kleinen Kahne
Ergreift es mit wildem Weh';
Er ſchaut nicht die Felſenriffe,
Er ſchaut nur hinauf in die Höh'.
Ich glaube, die Wellen verſchlingen
Am Ende Schiffer und Kahn:
Und das hat mit ihrem Singen
Die Loreley gethan.

Heinrich Heine.

Mathematics: (GEORGE W. MYERS.) I. Geometry: The special work of this grade being the study of Greece, the geometry of certain architectural forms will be taken up. Chief among these forms will be the arch, the truss, the column, and the dome. The half-arch shown in the figure is held in equilibrium by the horizontal thrust T, the reaction of the right half of the arch. The block B, C, D, E is held in equilibrium by the forces T, F, and the reaction of the block E, D, G, H (called *Voussoir*). Each Voussoir is in a similar condition to this, the direction, intensity and point of application of the reactions R_1, R_2, R_3, etc., being determined by the principle of the *parallelogram*, or *triangle of forces*. (See October and November COURSE OF STUDY under Pedagogic School). The Criteria of Safety for an arch are:

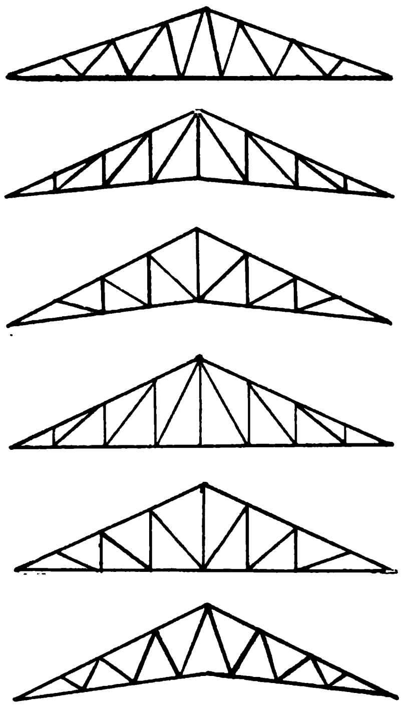


(1) To prevent overturning, it is necessary that the line of resistance, A, R_1, R_2, R_3, R_4, R_5, R_6, shall lie everywhere between the arcs C, D, G, J, L, N, Q (the *intrados*) and B, E, H, K, M, P, R (the *extrados*).

(2) To prevent crushing, the line of resistance must cross the joint far enough from the edge so that the maximum pressure shall be less than the crushing strength of the stone.

(3) To prevent sliding, the angle between the line of resistance and the normal to the joint must be less than the angle of friction of the surfaces.

The truss will be taken up with sufficient detail to show how the forces act within and upon it, and the geometry that underlies its construction. The dome is an arch revolved about its vertical axis through 180°. Some of the simpler forms of trusses are given here.



This with some remarks on the column will show the need of a study of the triangle and allied rectilinear figures, and necessitate about as much as is usually given in Book I.

As the study of the geography of Greece necessitates a knowledge of local environment, the field-work in geometry will be directed toward the construction of a careful topographic map of a local area, perhaps of the south end of Lincoln Park. The geometry will be worked out of the problems which grow out of the field-work, after the manner suggested by the three propositions below.

(4) Any two geometrical figures, such as lines, angles, triangles, quadrilaterals, etc., are said to be equal if when superposed they coincide throughout. (Congruency.)

The lines, angles, etc., which make up a geometrical figure are called its *parts*. Parts which are similarly situated with respect to the lines, angles, etc., of a figure are called corresponding or homologous *parts*.

The corresponding parts of equal figures are obviously equal.

When two lines cross, or cut, each other they are said to *intersect*.

How many straight lines can be drawn through a single point?

How many straight lines can be drawn through two fixed points?

Can a straight line always be drawn through two fixed points?

A line is said to be *determined* by points when one line, and only one, can be drawn through them.

What is the least number of points which will determine a straight line?

Can three points ever determine a line? Why do they not always?

Points are *located*, or *fixed*, on paper by means of pen or pencil dots; on the blackboard, by crayon dots; on the ground, by chaining-pins or flag-poles; a straight line is *located*, or *fixed*, on the ground by fixing two points lying in it.

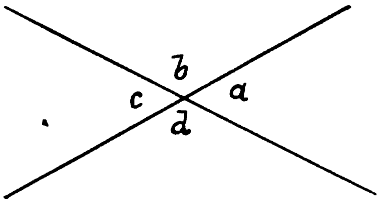
Field-Work: Locate two intersecting straight lines on the surface of a level tract of ground, and set up a compass, or plane table, over the point of intersection. Measure carefully all four of the angles. What angles are equal?

Remark: A very useful plane table can be made at an expense not to exceed $1.50 by screwing to a 75-cent flat-topped camera tripod a light drawing-board, and using a small 25-cent level, which can be had of any hardware dealer, to level up with. A cheap (5-cent or 10-cent) foot-rule with needles set vertically in it will serve for an *alidade*, or sight.

Drawing Exercise: Draw two intersecting straight lines on paper, and with a protractor measure all four angles. Which angles are equal?

When two straight lines meet, the two angles lying on opposite sides of the same line are called adjacent angles, as a and b, or a and d, etc.

Two angles lying on opposite sides of both lines are called opposite, or vertical, angles, as a and c, or b and d.

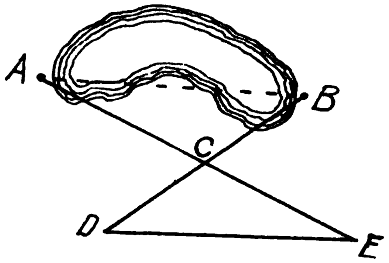


Exercise: Cut the paper along the two intersecting lines, and fit the angles over each other, and state in geometrical terms which angles are equal.

Demonstration

PROPOSITION I: *Opposite, or vertical, angles are equal.* Prove.

Let it be desired to find the length, A, B, of the lagoon.



Field-Work: Let flag-poles be set up at A, B and some convenient third point, C. Prolong the lines BC and AC through C, making CD equal to BC and CE to AC. Set up poles at D and E and chain the distance DE.

Drawing Exercise: Draw on paper three lines, such as AB, AC, and BC, then prolong AC and BC, as above, until CE and CD are equal respectively to AC and BC. Draw DE, and cut out the figure CDE. Can you place it upon ACB so that it will fit? What relation holds between DE and AB?

Try this same exercise, prolonging AC to E, making CE equal to BC, and extending BC to D, making CD equal to AC, and connecting DE. Cut out the figure CDE, and fit it over ACB as before. What relation between DE and AB?

In both cases what parts of the triangles were constructed equal? What principle does your experiment seem to show?

Define proposition and demonstration, and illustrate the definitions by the following:

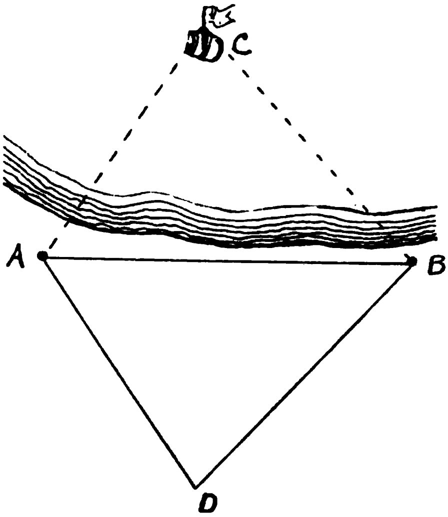
Demonstration

PROPOSITION II. ***When two sides and the included angle of one triangle are equal respectively to two sides and the included angle of another, the triangles are equal.*** Prove.

Remark: The substance of this proposition is sometimes stated thus: A triangle is *determined* by two sides and the included angle.

Query: Can you draw and cut out any triangles having the same two sides and included angles which will not exactly fit over each other, or *coincide?*

Find the distances from the buoy, C, to the points A and B on shore.



Field-Work: Locate the line AB by placing flag-poles at A and B, or at any other two (why two?) points along AB. With a plane table, or compass, set up over A, measure the angle CAB, and set a flag-pole out along the direction AD, making BAD equal to CAD. Similarly at B, measure angle ABC, and set a flag-pole out in the direction BD, so that ABD shall equal ABC. Then prolong AD and BD until they intersect, and set a pole at the point of intersection. Finally, chain AD and BD.

Drawing-Work: With ruler and protractor draw this figure in small with as great accuracy as possible. Cut the paper along the lines AD and BD, and fold the figure ADB over the line AB, bringing it into the plane of the figure ACB. Does ADB fit closely (coincide with) ACB?

Would the problem have been solved by making angle BAD equal to angle ABC, and angle ABD equal to angle BAC? What line would you then have measured for BC? for AC?

In the field-work, what particular parts were measured? Upon what common feature does the equality of the two triangles ACB and ADB seem to depend here?

Demonstration

PROPOSITION III: *If two angles and the included side of one triangle are equal respectively to two angles and the included side of another, the triangles are equal.* Prove.

II. **Algebra**: The great superiority of the methods of algebraic analysis over those of arithmetic in dealing with complicated numerical relations is perhaps sufficient reason in itself for retaining algebra as a part of the common school course. To many this is the only office algebra ever performs; but this is not the most important function of the subject. The fact that it is fundamental to all more advanced mathematical studies, including Physics, Mechanics, Astronomy, and all the engineering sciences, has led some to think that it is the most needed, and from lack of skill in handling it is the least used of the modern industrial fabric. Substantially all there is of Trigonometry is derived from the algebraic transformation of the following six simple relations: $s^2+c^2=1$; $t=s/c$; $T=1/t$; $S^2=1+t^2$ and $C^2=1+T^2$; $v=1-c$.

Assuming these relations, prove the following equations:

(1) $\frac{t-s}{s^3}=\frac{S}{1+c}$;
(2) $ct+sT=s+c$;
(3) $(2-v)\,v=s^2$;
(4) $\frac{c}{sT^2}=t$;
(5) $(t+T)\,sc=1$;
(6) $(S^2-1)\,(C^2-1)=1$;
(7) $SC\,(c^2-s^2)=T-t$;
(8) $(s+c)\,(t+T)=S+C$;
(9) $T+\frac{s}{1+c}=C$;
(10) $s\,(S+C)-c\,(S-C)=SC$;
(11) $(C-T)^2=\frac{1-c}{1+c}$;
(12) $(1+t^2)\,(1-T^2)=S^2-C^2$;
(13) $\frac{t-T}{t+T}=\frac{2}{C^2}-1$;
(14) $S^2\,C^2-2=t^2+T^2$;
(15) $T-SC\,(1-2s^2)=t$;
(16) $C\,(S-1)-T\,(1-c)=t-s$;
(17) $v\,(S+1)+(1-s)\,(C+1)=st+cT$;
(18) $\frac{v\,(1+S)}{s}+\frac{(1-s)\,(1+C)}{c}=SC$;
(19) $s^2\,(t^2-1)+c^2\,(T^2-1)=(1-2c^2)^2\,S^4$;
(20) $c^4-s^4=c\,(1-t)\,(s+c)$.

Eleventh and Twelfth Grades

American History in the Twelfth Grade: (EMILY J. RICE.) The Revolutionary Period is our subject of study for January. Much original material may be found for this work in Hart's *Contemporaries and Source Book*, American History Leaflets, Old South Leaflets, and *Source Extracts*, by Caldwell.

To illustrate the different methods of argument of the English statesmen on the one hand and the American on the other in regard to taxation, a few other extracts from original material have been selected. Our aim is to show the theoretical reasoning of the Americans in contrast to the practical thought of the English. These selections, with some illustrations of the spirit of the times, are given below. Extracts from Locke's *Treatise on Civil Government* may also aid in this work.

DISCUSSION OF THE STAMP ACT IN THE BRITISH PARLIAMENT

George Grenville: "The colonies have a right to demand protection from parliament, and parliament, in return, has a right to enforce a revenue from the colonies; protection implies an army, an army must receive pay, and pay requires taxes; on the peace, it was found necessary to maintain a body of ten thousand men at a cost exceeding three hundred thousand pounds, most of which was a new expense; the duties and taxes already imposed or designed would not yield more than one hundred thousand pounds, so that England would still have to advance two-thirds of the expense; it was reasonable for the colonies to contribute this one-third part of the expense necessary for their own security." (Adapted.)

Jackson : " The parliament may choose whether they will tax America or not; they have a right to tax Ireland, yet do not exercise that right. Still stronger objections may be urged against their taxing America. Other ways of raising the moneys there requisite for the public service exist, and have not yet failed; but the colonies in general have with alacrity contributed to the common cause. It is hard all should suffer for the fault of two or three. Parliament is undoubtedly the universal, unlimited legislature of the British dominions, but it should voluntarily set bounds to the exercise of its power; and if the majority think they ought not to set these bounds, then they should give a share of the election of the legislature to the American colonies, otherwise the liberties of America, I do not say will be lost, but will be in danger; and they cannot be injured without danger to the liberties of Great Britain."

For the argument of William Pitt, see Hart's *Contemporaries*, vol. 2, p. 404.

THE STAMP ACT AS DISCUSSED BY AMERICAN COLONISTS

Virginia House of Burgesses. Resolutions written by Patrick Henry, and adopted:

Resolved, That the first adventurers and settlers of this, his majesty's colony and dominion, brought with them and transmitted to their posterity, and all other of his majesty's subjects, since inhabiting in this his majesty's said colony, all the privileges, franchises, and immunities that have been at any time held, enjoyed, and possessed by the people of Great Britain.

Resolved, That by two royal charters granted by King James the First, the colonists aforesaid are declared entitled to all the privileges, liberties, and immunities of denizens and natural born subjects to all intents and purposes, as if they had been abiding and born within the realm of England.

Resolved, That the taxation of the people by themselves, or by persons chosen by themselves to represent them, who can only know what taxes the people are able to bear, and the easiest mode of raising them, and are equally affected by such taxes themselves, is the distinguishing characteristic of British freedom, and without which the ancient constitution cannot subsist.

Resolved, That his majesty's liege people of this most ancient colony, have uninterruptedly enjoyed the right of being thus governed by their own assembly in the article of their taxes and internal police, and the same hath never been forfeited, or any other way given up but hath been constantly recognized by the King and people of Great Britain.

Resolved, therefore, That the general assembly of this colony have the sole right and power to lay taxes and impositions upon the inhabitants of this colony; and that every attempt to vest such power in any persons whatsoever, other than the general assembly aforesaid, has a manifest tendency to destroy British as well as American freedom. (Fifth rescinded.)

Plymouth Town Meeting: "This place, sir, was at first the asylum of liberty, and we hope will ever be preserved sacred to it, though it was then no more than a barren wilderness, inhabited only by savage men and beasts. To this place our fathers (whose memories be revered), possessed of the principles of liberty in their purity, and disdaining slavery, fled to enjoy those privileges which they had an undoubted right to, but were deprived of by the hands of violence—oppression in their native country. We, sir, their posterity, the freeholders and other inhabitants of this town, legally assembled for that purpose, possessed of the same sentiments and retaining the same ardor for liberty, think it our indispensable duty on this occasion to express to you these our sentiments of the stamp act, and its fatal consequences to this country, and to enjoin upon you (delegates), as you regard not only the welfare, but the very being of this people, that you (consistent with our allegiance to the King and relative to the government of Great Britain), disregarding all proposals for that purpose, exert all your power and influence in opposition to the stamp act, at least till we hear the success of our petitions for relief. We, likewise, to avoid disgracing the memory of our ancestors, as well as the reproaches of our own consciences, and the curses of posterity, recommend it to you to obtain if possible in the honorable house of representatives of this Province, a full and explicit assertion of our rights, and to have the same entered on their public records, that all generations yet to come may be convinced that we have not only a just sense of our rights and liberties, but that we never with submission to Divine Providence will be slaves to any power on earth."

For the Stamp Act Congress, see Hart's *Contemporaries*, Vol. II, p. 402. See also *Principles and Acts of the Revolution.*

General Gage's letter, written at New York: "It is difficult to say, from the highest to the lowest, who has not been accessory either by writing or by mutual agreements to oppose the act, by what they are pleased to term all legal opposition to it. Nothing effectual has been proposed either to prevent or quell the tumult.

"The rest of the provinces are in the same situation as to a positive refusal to take the stamps, and threatening those who shall take them to plunder and murder them; and this affair stands in all the provinces that unless the Act, from its own nature enforce itself, nothing but a very considerable military force can do it."

THE REPEAL OF THE STAMP ACT

English Parliament, House of Lords. Lord Shelburne: "Before we resolve upon rash measures, we should consider first the expediency of the law and next our power to enforce it. The wisest legislators have been mistaken. The laws of Carolina, though planned by Shaftesbury and Locke, were found impracticable and are now grown obsolete. The Romans planted colonies to increase their power; we, to extend our commerce. Should the regiments in America, at Halifax or Pensacola, embark at once upon the same destination, and no intervening accident disappoint the expedition, what could be effected against colonies so populous and of such magnitude and extent? The colonies may be ruined first, but the distress will end with ourselves."

Halifax, and others: "Protection without dependence and obedience is a solecism in politics. The connection between Great Britain and her colonies is that of parent and child. For the parent not to correct the undutiful child would argue weakness. The duty to enforce obedience cannot be given up, because the relation cannot be destroyed. The King cannot separate his colonies any more than any other part of his dominions from the mother country, nor render them independent of the British legislature. The laws and constitution of the country are prior and superior to charters, many of which were issued improvidently and ought to be looked into."

"The eyes of all the House turned upon Pitt as he rose in his place; the Americans present in the gallery gazed at him as at the appearance of their good angel or savior." (Bancroft.)

Pitt: (He had said that his resolution was taken.) "If I can crawl or be carried, I will deliver my mind and heart upon the state of America. I approve the address in answer to the King's speech; for it decides nothing and leaves every member free to act as he will. The notice given to parliament of the troubles was not early and it ought to have been immediate. I speak not with respect to parties. I stand up in this place single, unsolicited and unconnected. As to the late ministry, every capital measure they have taken is entirely wrong." See Bancroft, Vol. III, p. 175.

Burke's *Conciliation with America* will be the literature study for the period.

Art in Connection with History: (JOHN DUNCAN.) The students of the fourth year High School will devote themselves during this quarter to the making of decorative and illustrative pictures for their own and other rooms of the school. They will also assist the general committee on decoration in arranging the building for special exercises and festivals. This will involve work in very various directions, making a considerable demand for originality, and as much of it will be on a large scale the students will gain in confidence or facility.

Latin, Eleventh Grade: (ALLEN W. GOULD.) We had planned to begin Cicero's first oration against Catiline the first of December, but we did not do so until the middle of the month. We took more time with Sallust, for the sake of bringing out clearly in the speeches of Cæsar and Cato the meaning of the Roman Senate as a great school where the Romans could be educated to govern themselves and so govern the whole world, by hearing all sides of each subject freely discussed. Then the question naturally arose, what power should govern the governors of the province, and why had this great and growing domain of law and order no representative government like our own?

The careful study of these two great and opposing characters — Cæsar and Cato — prepares the student to anticipate what their views will be in the crisis. And as we pass into Cicero's orations we meet another character, and are to look at the same crisis through his eyes. This way of approach seemed to give the pupils a keen interest in finding out what Cicero's views and reasons would be. It also makes his oration seem easy to them to know what he was talking about, as his original hearers did.

In connection with the first oration, it is necessary to investigate the case of the Gracchi and try to see what their attempts meant. This helps the students to get more light on the crisis and see how long it had been developing. The pupils are also asked to study Cæsar in English by reading an article in an encyclopedia, and then Cæsar's life by Plutarch, and comparing it with Fowler's *Cæsar* and Mommsen's account of the same period. Besides this, each student is requested to be responsible for one other life by Plutarch, either that of Cato or of Cicero or of Pompey.

The geography thus far has been confined to the movements of Catiline in Italy and the significance of the Alps and Apennines as a double barrier for Roman civilization.

General Geology, Eleventh Grade: (WALLACE W. ATWOOD.) The work of this course as outlined for December was not completed during that month, and the work this month will be a further consideration of the physiographic areas of the eastern portion of the United States, following the outline published in the December number.

Art Expression Work in General Geology: I. Water-colored paintings of landscapes chosen from the eastern portions of the United States.

1. Coast scenes in New Jersey and North Carolina.
2. Coast scenes in New England.
3. Inland on the coastal plain.
4. Inland in the New England region.

II. Chalk modeling of scenes similar to those chosen for painting.

Chemistry: (ALICE PELOUBET NORTON.) The study of the leaves and their constituents has introduced the pupil to the elements oxygen, hydrogen, nitrogen, and carbon. The properties of air and water have been investigated, as well as the phenomena of combustion. The students have become somewhat familiar with chemical methods and the processes of analysis and synthesis, and have learned some chemical nomenclature, and become acquainted with certain classes of compounds, as the oxides and carbonates.

The next step is the investigation of the mineral matter of the leaves. The ash is mixed with distilled water, thoroughly stirred, and then filtered and washed, and the filtrate evaporated and weighed. The flame test is then applied to discover the presence or absence of potassium and sodium. Some of the residue is again dissolved, and a few drops of silver nitrate added to the test for chlorine. To further study chlorine, it is prepared for the students from manganese dioxide and hydrochloric acid in the usual way. A jet of hydrogen burned in the chlorine, with the consequent formation of hydrochloric acid, may lead to the discussion of the meaning of the term "acid." The best opportunity for introducing this, with the supplementary ideas of "base" and "salt," will be carefully sought.

The following quantitative experiment for the determination of the chlorine in common salt will be used:

Pulverize about 5 grams of table salt, and dry it thoroughly by heating it in an evaporator for five minutes over the Bunsen burner flame. When cool weigh out exactly 1 gram of the salt. Put this in a beaker. Add about 30 c. c. of distilled water, and warm until the salt dissolves. Add 10 drops of nitric acid. Measure out 125 c. c. of silver nitrate solution, and, using a stirring rod to direct the stream, pour carefully, with constant stirring, the nitrate solution into the salt solution. Protect the contents of the beaker from the action of sunlight. Heat gently, with occasional stirring, until the precipitate has settled. Have ready in a funnel a well-dried and weighed filter paper. Decant the clear liquid down the rod into the filter. Transfer all the precipitate to the filter. In order to get out the last particle, use your rod and a stream of water from the wash bottle. Wash the precipitate well with distilled water until 3 c. c. of the filtrate gives no turbidity with one drop of hydrochloric acid. Dry the precipitate on the filter paper to constant weight, being careful not to burn the paper. Find the weight of the silver chloride formed. Calculate the percentage of chlorine in the sample of salt used.

This experiment will introduce the subject of the law of definite proportions. If the pupils are ready for it, the atomic theory in its simplest form will be taken up, with atomic and molecular weight,

The amount of chlorine as well as the proportion of chlorides in the ash will be calculated.

Mathematics: (GEORGE W. MYERS.) The work for this month will be the same for these grades, and it will include the study by trigonometric methods of the same subject-matter as is given under the heading Geometry for the Ninth Grade. In addition to this, some work will be begun with the compass, transit, and other civil engineering instruments, by way of preparation for the field-work, which will be again taken up as soon as the weather will permit. During this month plain trigonometry will be completed, and numerous exercises will be given in the design of parts of structures, in the composition and resolution of forces, and in the triangulation of distances.

High School and Ensemble Songs: *The Happy Farmer*, *Peaceful Slumbering*, *Thy Mercies, Lord*, (canon for two voices); *We Merry Minstrels* (round, three parts), Modern Music Series, Third Book; *The Fir Tree*, *All Ye Nations*, *On the Wild Rose Tree*, *Ring Out, Wild Bells*, Songs of Life and Nature.

Morning Exercises

> "So may the New Year be a happy one to you, happy to many more whose happiness depends on you. So may each year be happier than the last, and not the meanest of our brethren or sisterhood debarred their rightful share in what our Great Creator formed them to enjoy."
>
> CHARLES DICKENS.

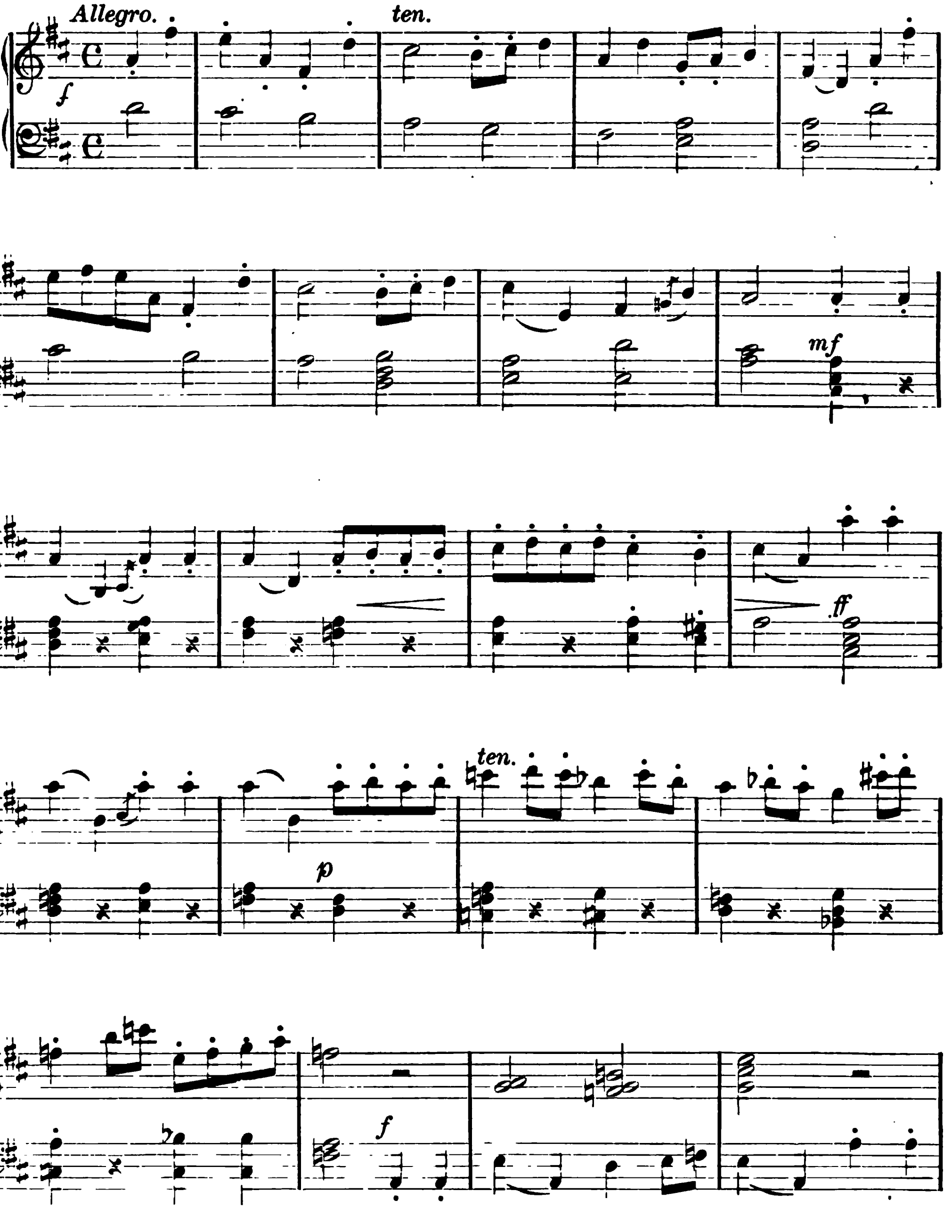
JANUARY	SUBJECT.	LEADER.
1.	The New Year	Miss Stilwell.
2.	The Children's Christmas	Mrs. Atwood.
3.	Time	Mr. G. W. Myers.
4.	Recent Events in Science	Mr. Atwood.
8.	Games	Miss Allen.
9.	Fairies	Miss Champlin.
10.	Marco Polo	Mrs. Flint.
11.	The Talk of the Bookshelves	Miss Warren.
15.	Alfred Tennyson	Mr. Flint.
16.	Les Jardins de Paris	Miss Ashlémann.
17.	Benjamin Franklin	Mr. Carman.
18.	Nuremberg	Miss Payne.
22.	Stories	Miss Cooke.
23.	The Sand Dunes	Miss Baber.
24.	Egypt	Mrs. Thompson.
25.	Robert Burns	Mr. Duncan
29.	History and Poetry	Dr. Benignus.
30.	Winter Sports	Miss Crawford.
31.	Wood	Mr. Carley.

Historical Events and Birthdays

January	1	Emancipation Proclamation Issued	1863
"	1	First Printing Press in America	1639
"	3	Battle of Princeton	1777
"	6	Charles Sumner	1811
"	8	Battle of New Orleans	1815
"	11	Thomas J. Edison	1847
"	11	Bayard Taylor	1825
"	11	Alexander Hamilton	1757
"	12	Pestalozzi	1746
"	12	Alfred Tennyson	1810
"	17	Battle of Cowpens	1781
"	17	Benjamin Franklin	1706
"	18	Daniel Webster	1782
"	22	Lord Bacon	1561
"	25	Robert Burns	1759
"	27	Johann Mozart	1756

Gavotte

CARL REINECKE, Op. 173, No. 3.



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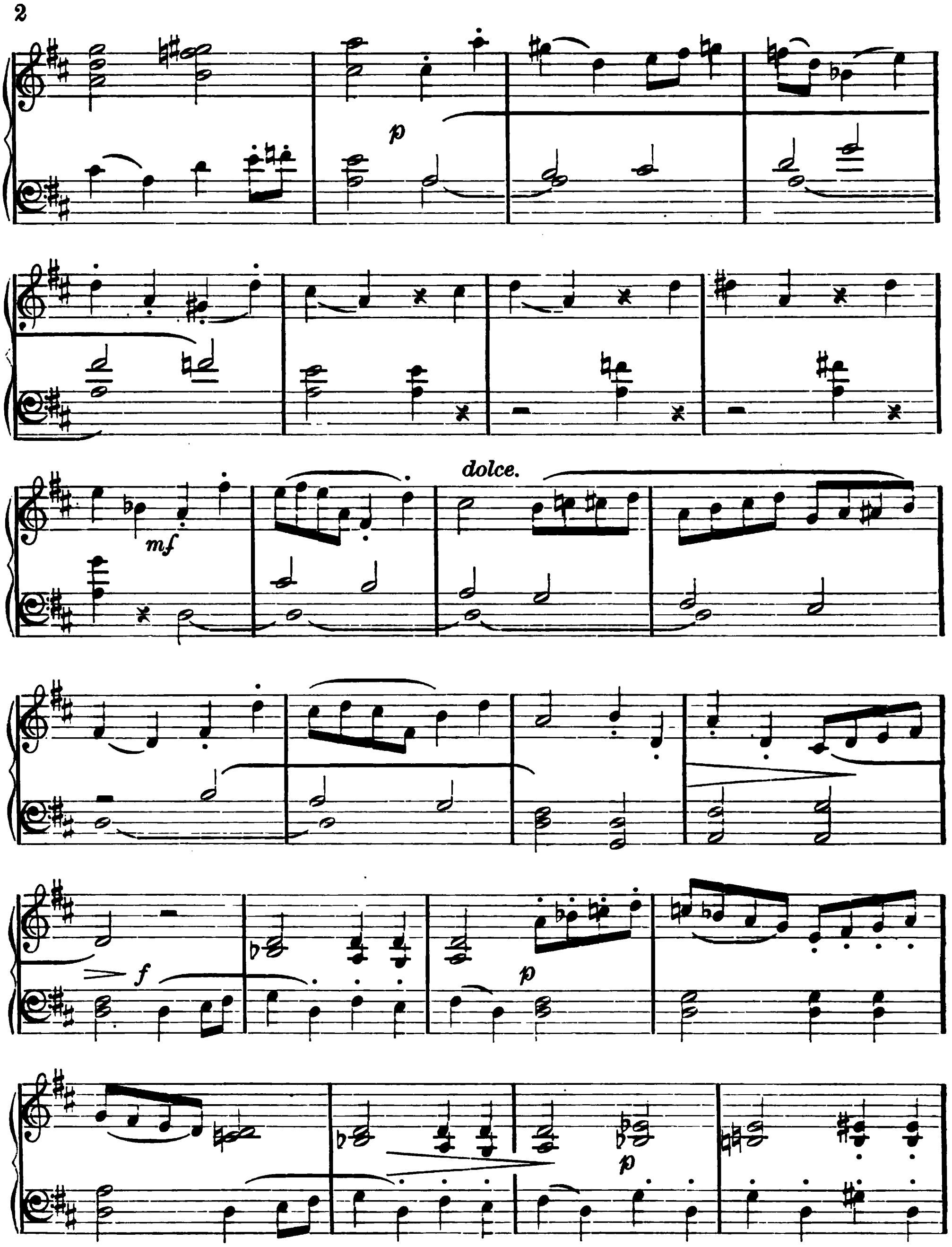

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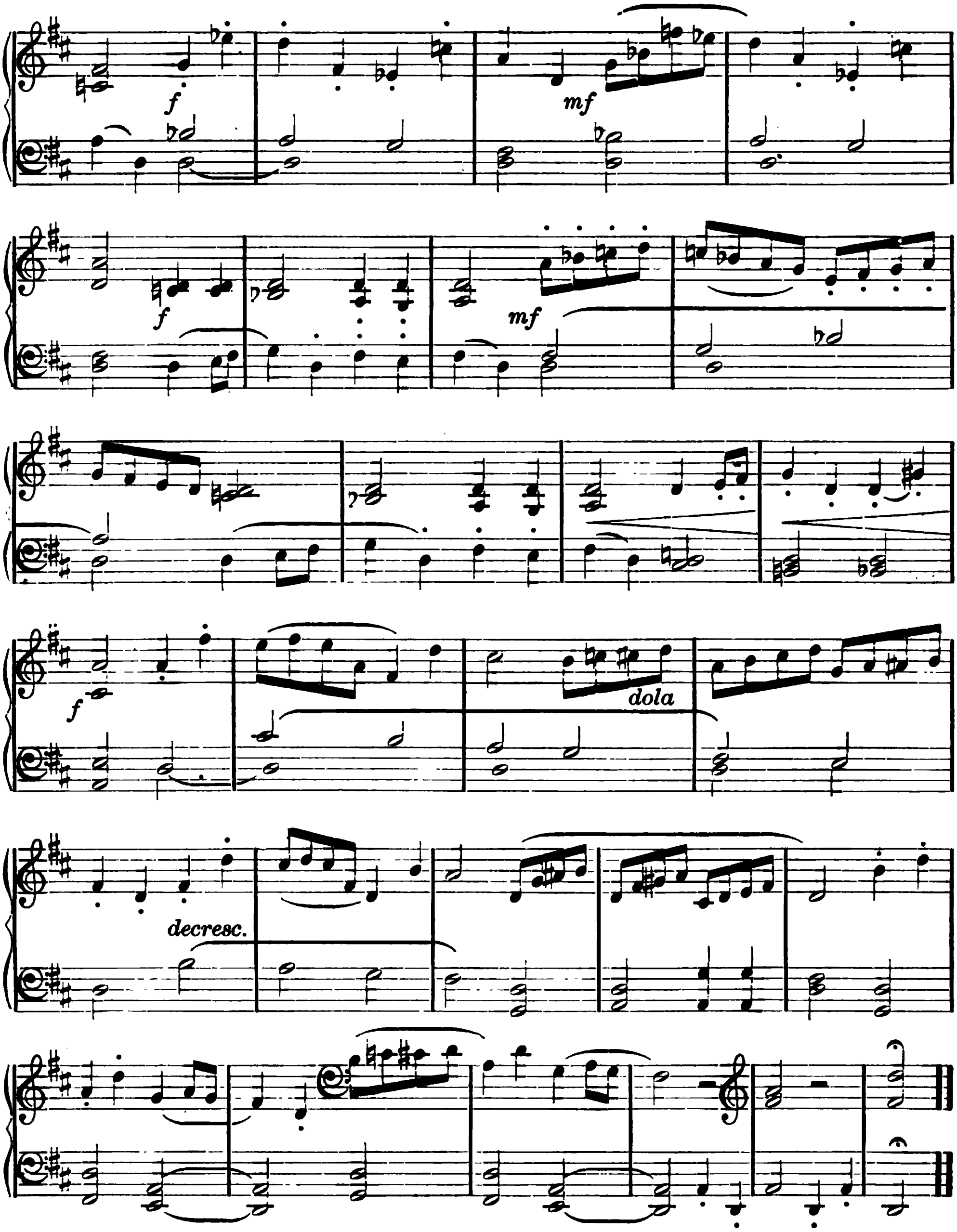
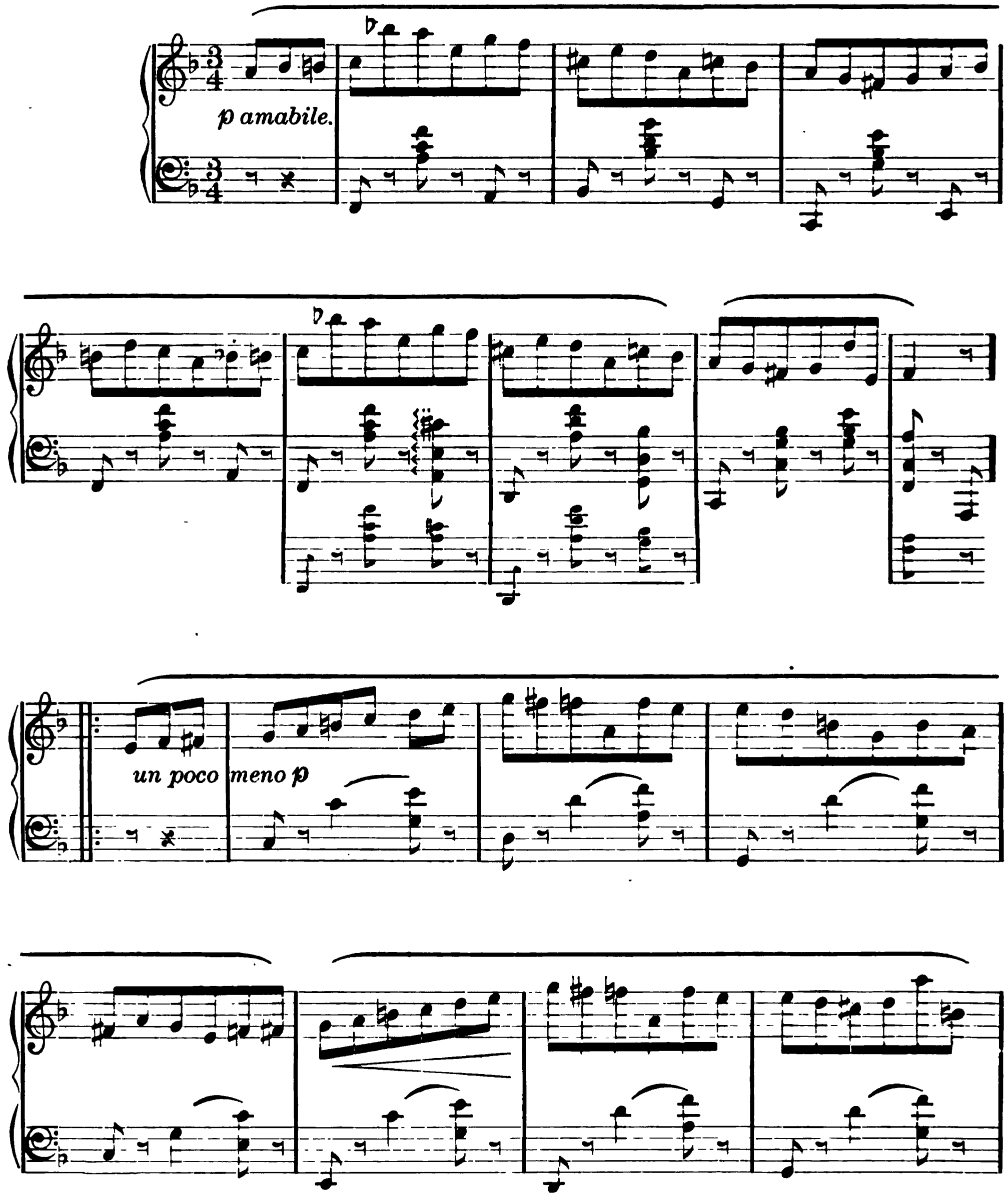


La Sylphide

From Bal Masque, Sept airs de Ballet. S. Jadassohn.

Mouvement de valse.



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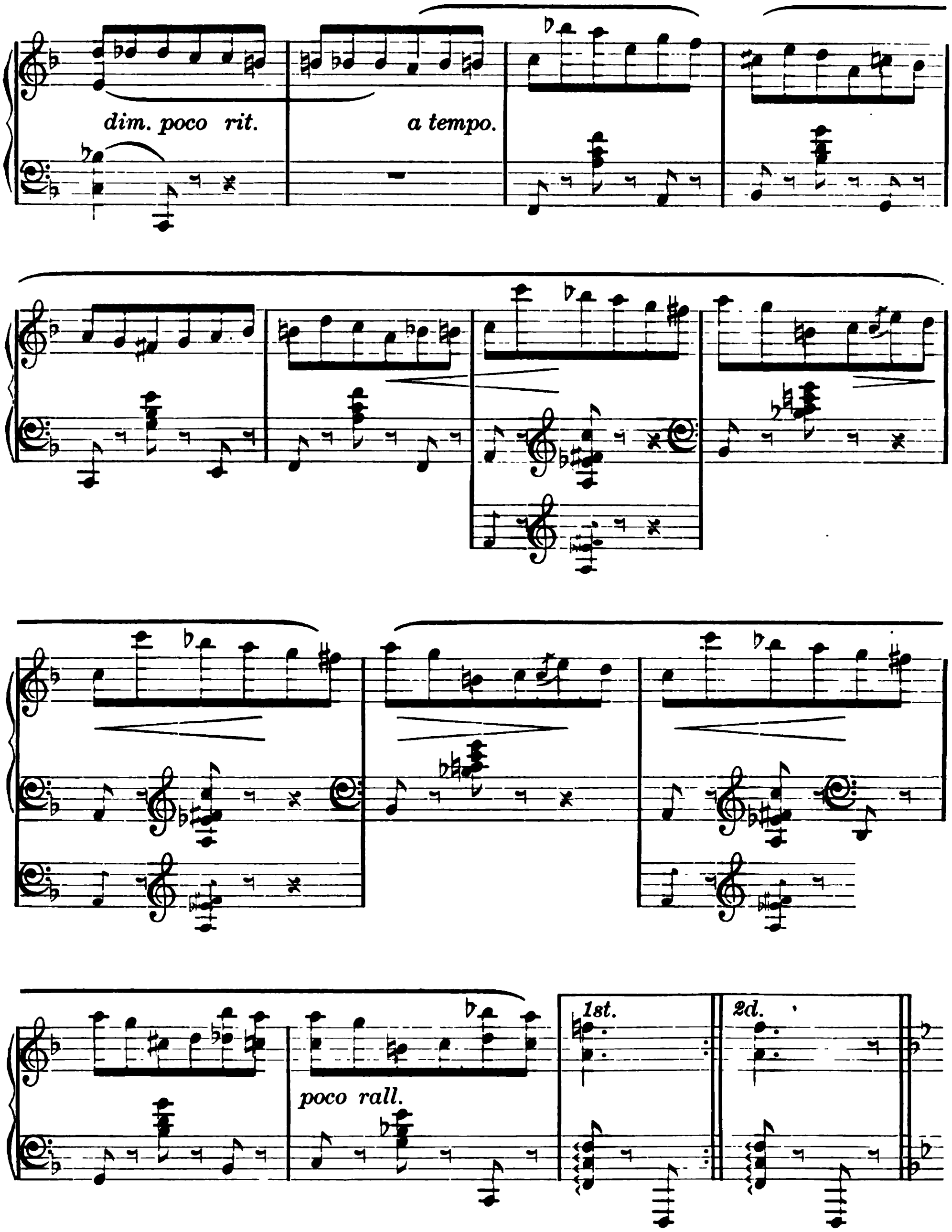

Reading List

Art and Industry

Binns.	*Story of the Potter.*	Mansfield.
Chase and Clow.	*Stories of Industry.*	Educ. Pub. Co.
Marsden.	*Cotton Spinning.*	Bell.
Marsden.	*Cotton Weaving.*	Bell.

Geography, Geology, and Travel

Ballou.	*Foot-Prints of Travel.*	Ginn.
Boner.	*Transylvania.*	Longmans.
Brown.	*Peoples of the World.*	Cassell.
Carpenter.	*North America.*	Am. Bk. Co.
Chisholm.	*Handbook of Commercial Geography.*	Longmans.
Davis.	*Elementary Meteorology.*	Ginn.
Davis.	*Physical Geography.*	Ginn.
Davis.	*Physical Geography of Southern New England.*	Am. Bk. Co.
Dawson.	*Compendium of Geography of North America.*	Stanford.
Dunlop and Dunlop.	*How We Spent the Autumn.*	Bentley.
Frye.	*Complete Geography.*	Ginn.
Gannett.	*Compendium of Geography of North America.*	Stanford.
Hayes.	*Southern Appalachians.*	Am. Bk. Co.
Holmes.	*Our Hundred Days in Europe.*	Houghton.
Mill.	*International Geography.*	Appleton.
	Grammar School Geography.	Rand-McNally.
Powell.	*National Geographic Monographs.*	Am. Bk. Co.
Reclus.	*Earth and Its Inhabitants.*	Appleton.
Russell.	*Glaciers of North America.*	Ginn.
Russell.	*Lakes of North America.*	Ginn.
Russell.	*Rivers of North America.*	Putnam.
Russell.	*Volcanoes of North America.*	Macmillan.
Shaler.	*Story of Our Continent.*	Ginn.
Shaler.	*United States of America.*	Appleton.
Shaler.	*Nature and Man in America.*	Scribner.
Tarr and McMurry.	*North America.*	Macmillan.
Tarr and McMurry.	*Home Geography.*	Macmillan.
Tarr.	*First Book of Physical Geography.*	Macmillan.
Tarbell.	*Werner Geography.*	Werner.
Waldo.	*Elementary Meteorology.*	Am. Bk. Co.
Willis.	*Northern Appalachians*	Am. Bk. Co.

History

Fiske.	*Critical Period of American History.*	Houghton.
Fiske.	*Discovery of America.*	Houghton.
Fiske.	*Dutch and Quaker Colonies in America.*	Houghton.
Frothingham.	*Rise of the Republic.*	Little.
Gay.	*Madison.* (American Statesmen).	Houghton.

Hart.	*American History Told by Contemporaries.*	Macmillan.
Hart.	*Formation of the Union.*	Longmans.
Hart and Channing.	*American History Leaflets.*	Lovell.
Lodge.	*Washington.* (American Statesmen).	Houghton.
Lodge.	*Hamilton.* (American Statesmen).	Houghton.
Lamartine.	*History of Celebrated Characters.*	Bentley.
McMaster.	*History of the United States.*	Appleton.
Mason.	*Origins of Invention.*	Scribner.
Morgan.	*Ancient Society.*	Holt.
Motley.	*Rise of the Dutch Republic.*	Bell.
Nadaillac.	*Prehistoric America.*	Putnam.
Nadaillac.	*Prehistoric Peoples.*	Putnam.
Payne.	*History of America.*	Macmillan.
Rice.	*Outlines in History.*	Flanagan.
Starr.	*Some First Steps in Human Progress.*	Winona Pub. Co.
Schouler.	*History of the United States.*	Dodd.
Winsor.	*Narrative and Critical History of America.*	Houghton.

Literature

Dodge.	*Hans Brinker.*	Scribner.
Irving.	*Knickerbocker History of New York.*	Putnam.
Irving.	*Legend of Sleepy Hollow.*	Putnam.
Irving.	*Rip Van Winkle.*	Putnam.
Lanier.	*Science of English Verse.*	Scribner.
Longfellow.	*Hiawatha.*	Houghton.
Longfellow.	*Kéramos.*	Houghton.
Sherman.	*Little Folk Lyrics.*	Houghton.
Stevenson.	*Child's Garden of Verse.*	Scribner.

Psychology and Pedagogy

Fiske.	*Outlines of Cosmic Philosophy.*	Houghton.
Froebel.	*Education of Man.*	Appleton.
Richter.	*Levana.*	Heath.
Scripture.	*New Psychology.*	Houghton.
Titchener.	*Outline of Psychology.*	Macmillan.
Wundt.	*Human and Animal Psychology.*	Sonnenschein.

Science

Cooke.	*Nature Myths.*	Flanagan.
Coulter.	*Plant Relations.*	Appleton.
Murché.	*Science Readers.*	Macmillan.
Rowley.	*Art of Taxidermy.*	Appleton.

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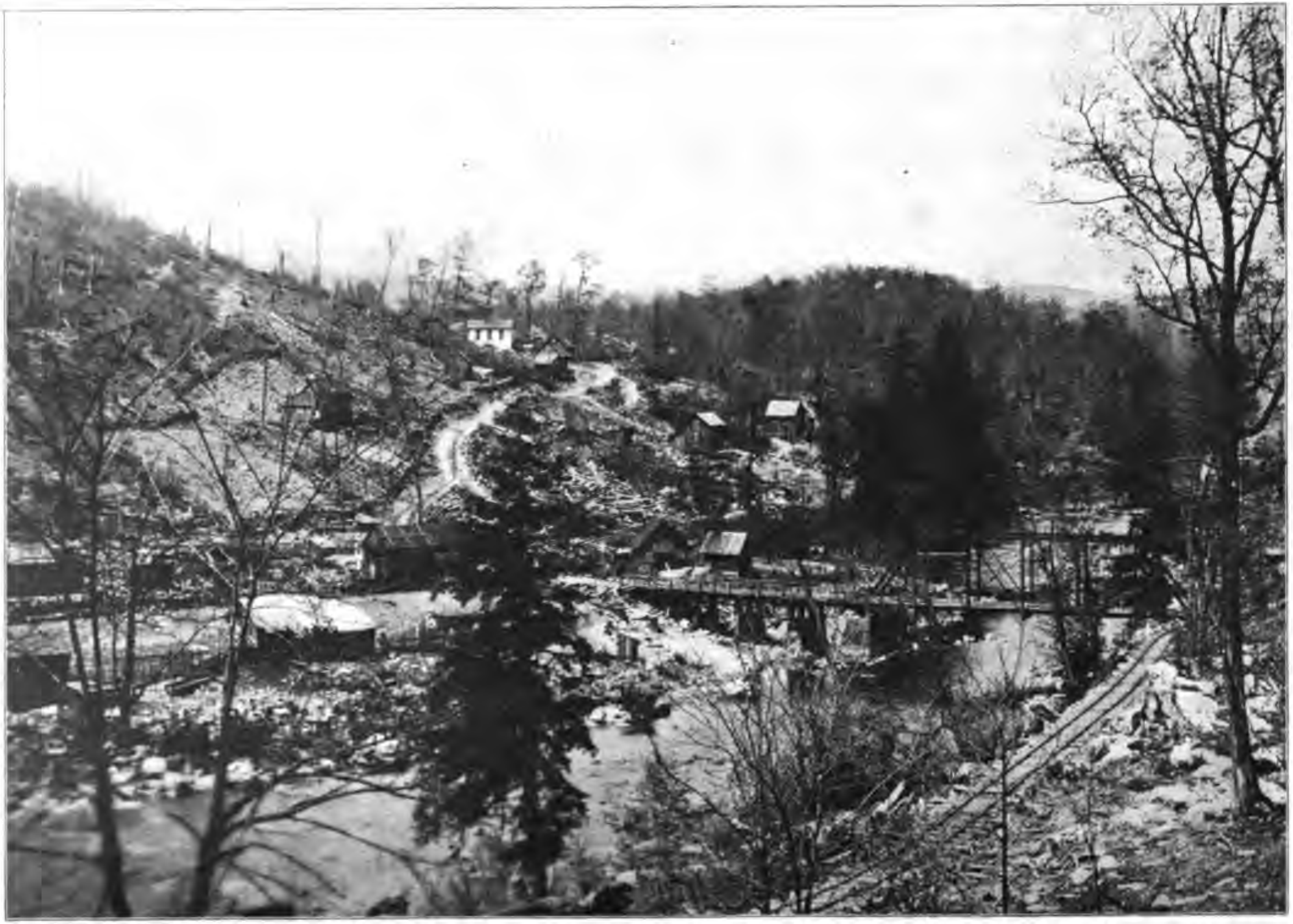

TYPICAL LUMBER REGION
See Reading Lessons for Primary Grades, page 540

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THE COURSE OF STUDY

A PUBLICATION FOR TEACHERS AND PARENTS

ISSUED MONTHLY—TEN NUMBERS A YEAR.

The Behavior of Swamp Plants

Otis W. Caldwell

EASTERN ILLINOIS STATE NORMAL SCHOOL

The definite relations that exist between plants and the conditions which surround them are of constant interest to those persons who see plants as things which are alive and performing work. One set of conditions makes possible a type of plant life which type must be adopted in a general way, at least by all the plants living among these conditions. That this type is adopted in a general way only is clearly shown by the fact that no two plants, even of the nearest kin, are exactly alike, no matter how nearly identical the conditions which affect them. Plants which live in water need certain structures which plants living on dry land do not need; and those living on the land of the upward slopes of high mountains, to be successful, must have some structures not found among plants living in the valleys below. As an outcome of these diverse conditions we have certain groups of plants which we recognize as mountain-slope plants; certain groups which are valley plants, and others recognized as water plants. Furthermore, some water plants live entirely beneath the water's surface, while others have their leaves floating or standing above the water. Thus we have a group of submerged water plants and a group of floating ones, each group needing structures peculiar to the demands of the conditions which surround it. These various environments have given rise to "plant societies." By this it is not meant that plants of nearest kin nor of greatest resemblances are associated, but those which have been able to respond to a particular environment by developing the structures needed for successful growth in that environment. Any given plant society usually contains species of plants widely separated in relationship, rather than those of closely related families.

A large community in which all the men are blacksmiths would not prosper, since all would demand the same kind of support. Communities of men prosper best when some of the men are blacksmiths, some are merchants, some physicians, and others working in various other lines, thus obtaining their support from the community in a variety of ways. Likewise, if in the plant society all the individuals were alike, or even of the same species, all could not be indefinitely supplied with the necessities of life. But with some kinds of plants needing certain soil and water elements, and other kinds needing other things, the members of the society live together and prosper fairly well, since all do not demand the same thing from the soil or water in which they grow. Notwithstanding this fact of the usual diversity of individuals in a plant society, there are many cases of massing

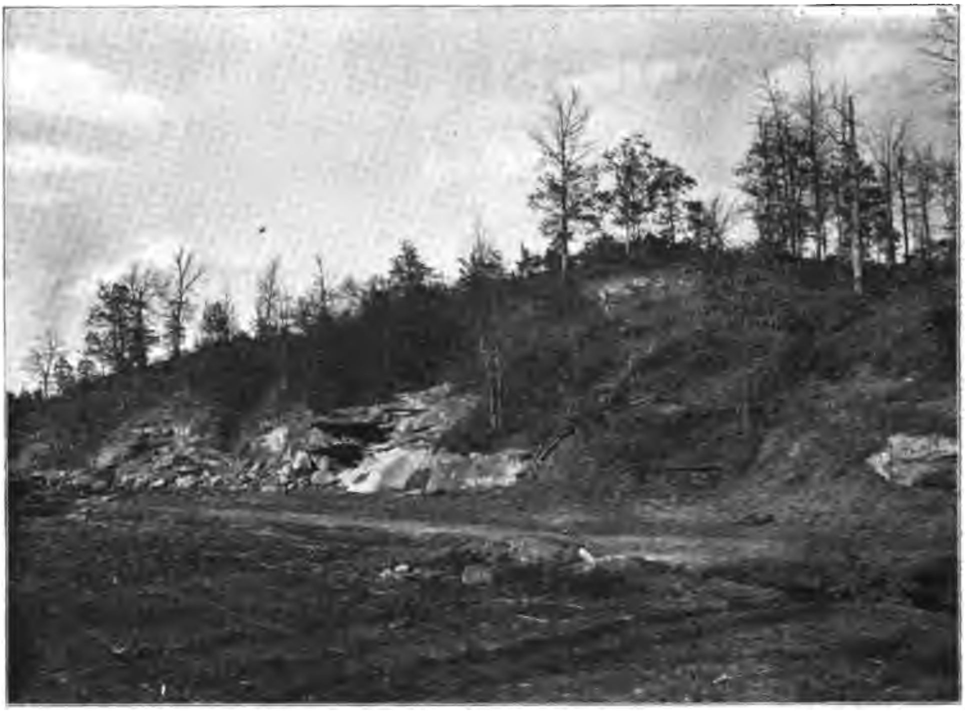


FIG. 1. A rock cliff where plants are fighting for their lives by trying to hold the soil. Where there are no plant roots the soil is readily removed by the action of water.

of members of a single species to the exclusion of all others. Such conditions are well illustrated in some pine and water lily societies.

As suggested above, the conditions of soil, water, air, and other elements of a given region have very much to do with determining the structure of the plants living in that region. On the other hand, the plants have much to do with determining the environment. This is admirably illustrated by a consideration of some of the morainic swamp regions, many of which are to be found in various places throughout the country formerly covered by the glaciers. At the time of the deposition of the terminal moraines left by the rapid recession of the great glaciers, there were formed basins of various sizes, many of which were left with no natural means of drainage, and consequently became ponds or lakes. During the earlier part of the life of these ponds or lakes, the water from the higher surrounding regions ran down the slopes, and as it ran, broke loose and carried with it parts of the earth or stone over which it flowed. These materials carried down by the water were deposited in the bottom of the pond, and by this filling process contributed greatly toward removing the body of water.

When the pond was comparatively young, however, the plants became established in all these regions, whose alteration affected the size, shape, and depth of the basin; and with the advent of these plants came some interesting occurrences in the life history of the pond. The plants which grow on the surrounding land send their roots deep into the soil as well as throughout its surface. Soon the soil is filled with mats of roots which serve to hold it and to keep it from being carried away by the action of the water. A good illustration of how the soil may be held against the action of the water is shown in Figure 1. In this view, which, however, is not of a morainic slope, it will be noticed that where there are no plants the soil has been carried away, thus leaving the land exposed.

On slopes which are not so steep, plants are much more successful in holding the soil, and in the regions surrounding most of the basins formed by the debris of the terminal moraine, the amount of erosion is not great during an average year. It is obvious then that one important stage in the life history of a pond or lake is that of rapid filling with earth as the result of a correspondingly rapid erosion of the exposed land. This stage ends when large numbers of plants have become well established on the surrounding land, though it must not be supposed that all erosion and consequent filling ends at this time.

Probably while these plants were becoming established on the land, the water plants made their appearance. Usually some of these water plants float in or upon the water, having nothing to hold them to any definite soil region. These form the free swimming water plant societies, some members of which are shown in Figure 2. Others may have their leaves upon, above or beneath the surface, and their roots in the soil, thus giving them relatively permanent positions. This condition is well illustrated by the usual habit of the ordinary white water lily. At the margin of the pond in the shallow water, and in the very wet earth outside the water, are found plants commonly spoken of as swamp or marsh plants. They are frequently represented by the water plantain, the bur-reed, the rushes, and the cat-tails. These plants, so far as concerns their roots, must be adapted to the same conditions as those of the plants mentioned in the water lily group, while their stems and leaves have many of the determining conditions found with dry land plants. By a more extended study we should find here some interesting and striking adaptations worked out by these plants which are adapting themselves to two groups of conditions, i. e., those of dry land plants for the leaves and at least parts of the stems, and the conditions of water plants for parts of the stems and the roots. In Figure 2 the fringe about the pond made by the marsh plant society is clearly shown.

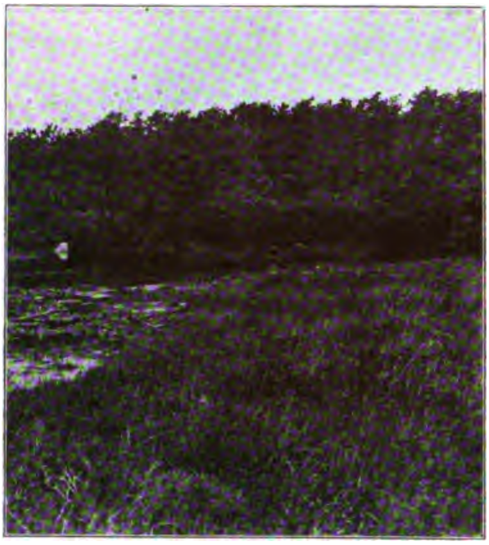


FIG. 2

A pond being obliterated by plants. In the water are water lilies and pond scums. Along the margin of the water the sedges and their crowd are encroaching. Following them are the shrubs and trees.

Back of this society of fringe plants there usually grows a society made up of a number of such shrubs as the willow and alder brush, while back of these will be found the trees or meadows (Figs. 2 and 3). These groups of plants from the free swimming society to the tree or meadow society may pass from one to the other by

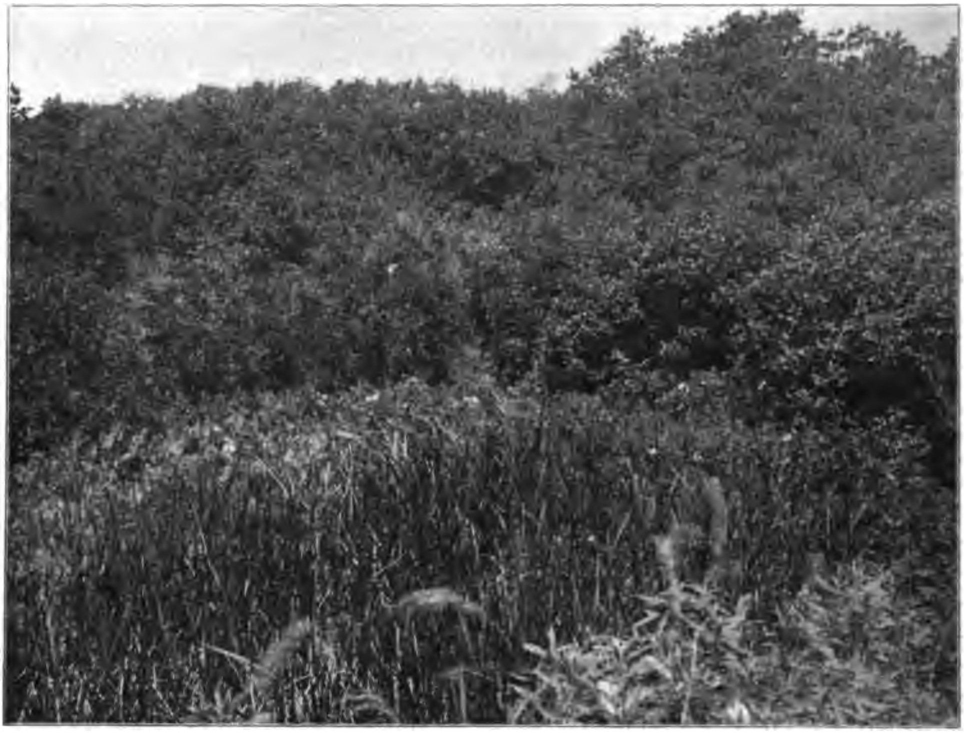


FIG. 3. A part of an old swamp, showing three of the four societies of plants interested in reclaiming it. Below, the sedge and cat-tail society, with which are seen fern plants. Back of this is the shrub society, and following the shrubs are the trees.

insensible gradations. Usually, however, the line of demarcation between the various societies is fairly clear, as will be seen by an examination of the accompanying figures.

A study of the ways in which these various groups affect each other and their environment will afford some interesting problems to those persons favorably located. The free swimming plants, and other water plants out from the water's margin, grow, build up their bodies, and die. Their dead bodies fall to the bottom of the pond, where they decay. Year after year this process goes on, gradually, decreasing the depth of the pond, and would eventually, even if unassisted, result in the obliteration of the pond as such. But around the margin the marsh plants are growing, forming thick masses. These build up their soil in at least two ways. The dead plant bodies as they decay add an appreciable amount annually. Furthermore, currents of water running into the pond from adjacent regions are checked by the fringe of marsh plants, and being checked tend to deposit here large quantities of the earth they carry. It is evident that here is a region of rapid soil building, and that this region pushes inward with relative rapidity, year after year diminishing the size of the body of water. The willows and their crowd which follow the marsh society grow and decay, and give way after a time to the trees. Such trees as are best adapted to wet soil, as the cottonwood, are in the forefront of the tree society, just as the best adapted shrubs, notably the willows, are in advance of that group, pushing forward the most tardily adapted marsh plants.

Finally this process has been carried on until the water begins to disappear from the pond, when, for at least some of the plants, a new problem arises. When the total annual encroachment of the society without was slight, it was not difficult for the free swimming plants to move sufficiently to obtain favorable growing places. But when the last of the water region has been occupied by the sedges, rushes, cat-tails, and their kind, the free swimming plants are no longer able to move slight distances and obtain freedom and the water habitat to which they are adapted. When any such great change in the environment of a plant, or any other organism, occurs, and the plant is unable to change the environment, one of three possibilities may be accepted. First, if the plant can migrate to new and favorable environment, it may prosper. Second, if it can readapt its structure to the changing conditions, it may remain, and possibly prosper. Third, failing to do either of these, it must cease to exist. The free swimming plants of the ponds must usually accept the third of these possibilities.

Such is not always so readily true with the water plants having roots. In Figure 4 is shown an old lily pond from which the water has disappeared. The lilies which formerly grew here in the water, as the conditions changed have so adapted their leaves, stems, and roots that they now grow in the so-called dry land with great luxuriance. In August, 1900, hundreds of these plants were seen in full flower with the leaf and flower stalks frequently three and one-half feet in length. Since this lily pond had become dry, it is obvious that these plants have accepted the second of the possibilities open to them.

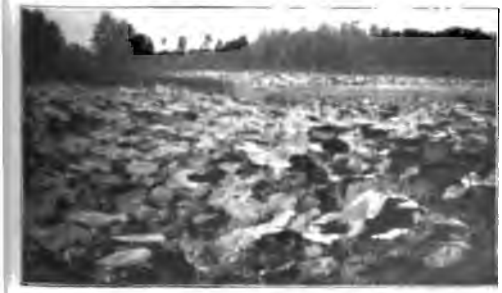


FIG. 4

An old lily pond. The leaves, stalks, and seed-pods show in the picture. This region was formerly covered with water the entire year. Now that the pond has become dry land, the lilies must learn to live in new conditions or die.

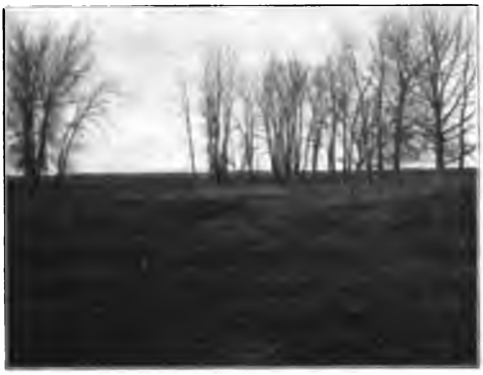


FIG. 5

An old pond almost entirely reclaimed. The incomplete circle of cottonwood trees was once at the margin of the water. The reclaiming of this pond was done almost entirely by natural means, since artificial drainage has been used in this region but a few years.

The last stage in reclaiming these regions by plants is brought about by continued building up of the soil until it is no longer a propitious environment for any of the plant societies mentioned except the last. Such a condition is shown in Figure 5, in which case the incomplete circle of cottonwood trees marks the point of a former margin of the pond. The interior, though somewhat low, has a few of the sedges remaining from the marsh society, but is well occupied by meadow grass, which is a dry land plant. In many places where these swamps formerly existed one may see plants such as the cottonwoods, willows, and swamp grasses remaining, and by their presence telling an interesting story as to what has been the history of their homes.

These plants are relatively plastic, and were able to make the necessary adjustments as the pond became a swamp, and the swamp passed through its various stages until it became a tillable field. In many of our farming regions, where this work of reclaiming was carried on almost entirely by these natural processes, a number of these readapted plants are to be found. The changes in the environment took place sufficiently slowly to make adaptations possible. In many other places artificial drainage and artificial removal of existing plant societies have made the changes in the environment so abrupt that plants could not make the adaptations necessary for growth in these new conditions, and there is little remaining besides the structure and contour of the land to suggest the former conditions.

Principles of Correlation

Francis W. Parker

I. A fundamental error in education is the isolation of subjects on the lines of conventional classification, thus attempting to separate, by teaching, the thought of one particular subject from the thought of other subjects to which it is organically related.

The educative value of one subject is primarily determined by its organic relations to all other subjects. It is therefore impossible to appreciate, or even to understand, any subject without knowing that it is but a part of the whole, and that each part penetrates the whole. Each subject has definite relations to all subjects; thus Physics and Chemistry are the sciences of ever-changing matter, and therefore intrinsic to the study of all other subjects. The distribution of heat, air, moisture, plant and animal life, over the earth's surface, cannot be profitably studied without a knowledge of the earth's surface.

II. **Unity of Subjects**: 1. Man and Nature comprehend all subjects. These two are one in the Creator and the created. The essence of the knowledge of Man and Nature is law; and law has its function in life. Life, then, is the central subject of study.

III. **Examination of Correlated Subjects:** INORGANIC MATTER. Physiography presents the knowledge of the earth's structure and surface.

Geology is the history of the continual changes in the earth's rock envelope or crust. Geology, then, is the history of Physiography: Physiography presents the effects and Geology the causes.

Mineralogy presents the knowledge of the nature and composition of the rock crust or of the material which is constantly undergoing geological and physiographical changes.

Unity: The present surface (Physiography), the changing surface (Geology), the material which changes (Mineralogy).

Meteorology teaches the action of heat, moisture, and air upon and in the earth's crust; and their distribution over the earth's surface. Heat, moisture, air, are the causes of changes in the rock crust (Geology), in the surface of the earth (Physiography), and in the composition of rock material (Mineralogy).

Unity: Causes of changes in the earth's crust (Meteorology), the changes (Geology), the intrinsic effects of changes (Mineralogy), the surface effects of changes (Physiography).

Three Earth Envelopes: 1. Rock, solid and pulverized. 2. Water. 3. Atmosphere.

These three envelopes, which interpenetrate each other, are constantly changing under laws. Physics and Chemistry present the causes, and therefore the laws, of all changes in inorganic matter. It follows that intrinsic knowledge of all inorganic matter depends upon a knowledge of Physics and Chemistry.

Unity: Changes in the earth's crust (Geology), in the nature and composition of rock (Mineralogy), in the resultant changes in surface (Physiography), in causes of changes (Meteorology); which in turn depend absolutely upon the laws of Physics and Chemistry. For instance, the movements of the earth's crust may be comprised under (1) volcanic action (Physics and Chemistry), (2) folding and faulting (Physics), (3) erosion (Physics), (4) building with eroded material by running water and winds (Physics). For instance: Changes in composition of rock by heat and moisture (Physics and Chemistry); changes in kinds of rock (Physics and Chemistry); changes in the earth's surface (Chemistry and Physics); in moisture and air (Physics).

IV. Correlation may be illustrated by distribution.

One outcome of the study of physiography is a knowledge of the distribution and relation of the surface forms of the earth — mountain ranges, river basins, plains, plateaus, etc. A knowledge of this distribution involves a knowledge of the architecture of continental and island structure (Geology), and the material out of which they are constructed (Mineralogy).

1. A working knowledge of Physiography makes a knowledge of the distribution of heat (Mathematical Geography) possible.

2. A knowledge of surface forms and the distribution of heat is the basis of a knowledge of air distribution.

3. Heat and air distribution explains moisture distribution.

4. Upon a knowledge of surface forms and soils (Mineralogy), and the distribution of heat and moisture (Meteorology), depends the knowledge of the distribution of plants.

5. Upon all the foregoing facts (1, 2, 3, 4) depends the distribution of animal life, including man.

NOTE.—Elementary study has for its purpose a preparation for the study of distribution. This probably may be accomplished in the Eighth or Ninth Grade. Correlation is absolutely essential to profitable elementary study.

V. **The Function of Inorganic Matter is Life:** 1. Plant Life. Plants depend upon (a) a surface environment (Physiography); (b) soil (Mineralogy); (c) heat (Physics); (d) air (Meteorology); (e) drainage—movement of water in the soil and on the surface (Physics and Chemistry); (f) fertilizing — changes in soil (Chemistry).

NOTE.—A knowledge of any plant comprehends its physiographical, vegetable and animal environment, climate, soil, the nourishment of the plant by moisture, the function of its water table (Geology), capillary attraction (Physics), evaporation and transpiration.

2. Animal Life. A knowledge of animal life comprehends a knowledge of inorganic plant matter under all its classifications, and a knowledge of plant life and its relation to other animals, including man.

3. Man's Life. Nature furnishes man with food, clothing, shelter, luxuries, means of communication and transportation, etc.

The key to man's evolution is his physical environment (surface forms, climate, soil, animal life), and his relations to the rest of mankind. Life on the plains, in woods and mountains, the surrounding plants and animals, enter into and become strong factors in individual and community life. All the sciences of man have the closest relations to nature— archæology, philology, anthropology, and ethnology. The philosophy of history can be understood only by the closest study of man's environment. Literature is the study of man and nature. Arts and crafts are the expressions of man under the influences of nature and society.

VI. **The Principles of Study:** 1. How to study is a question of immense, if not the greatest, importance in education. Man and nature are the sources of knowledge. They comprehend, therefore, the subjects of all study.

2. Attention to educative subjects is study. Attention is the holding in mind of images for their growth.

3. A strong image is (a) a close correspondence to an external object, (b) a unit consisting of strong related images.

4. Analysis, judgment, inference, and reason have images for their intrinsic basis. A philosophical memory is possible only under the potency of strong images. The function of language is to hold and unite images, and the results of image growth.

5. There are three modes of attention defined by external stimuli: Observation, hearing-language, and reading.

6. Observation is imaging under the stimulus of an external object acting upon consciousness; the purpose of observation should be the formation of a strong image corresponding to the object observed.

7. Hearing-language and reading have both the same function, to wit: the union of images that have been previously in consciousness.

These processes become study when the images are held in consciousness for growth.

The laws for the concentration and expansion of images are complied with when correlated images come freely into consciousness, unobstructed by the limits of one class of objects or subjects. Following a single classification means the exclusion of images that should make the central image strong. For instance, the images of history, excluding physiography, meteorology, botany, etc., are in a marked degree weak or attenuated. Physics and chemistry, without the images of the materials changed under the action of physical and chemical forces, induce an obscurity of image.

Conclusion: From the standpoint of external objects and from that of psychology, the isolated teaching of subjects is absolutely unpedagogical.

Discipline and skill in all the modes of attention are best acquired through the energy of growing, correlated images.

All educative acts of attention should be the imaging of Man and Nature; that is, all study should be concentrated upon these subjects. Thoroughness in knowledge consists of strong, correlated images. The processes of attention should be acquired under the energy of imaging.

Expression in all its modes — gesture, speech, music, making, modeling, painting, drawing, writing — has three influences upon human growth: (a) Physical development in making the body, including its agents, effectively responsive to the will; (b) mental development in the reaction of motor discharge upon consciousness; (c) strengthening and disciplining moral growth under a high ideal.

The best physical growth is the best mental and moral development. Each mode of expression has its special reactive and educative function, for which no one or all of the other modes can be substituted.

Elementary skill in all the modes of expression may be best and most economically acquired through the manifestation of educative thought. The eight years of the elementary school may be spent in the direct study of Man and Nature, which means that both attention and expression should be concentrated upon the study of nutritive subjects.

Under the purpose of acquiring certain definite quantities of knowledge the attempt to teach in the most elementary way all the subjects classified under Man and Nature, together with the development of power and skill in all the modes of attention and expression, would be fatal in the extreme; it would be attempting the impossible. Under the ideal of knowledge-getting there is no guide to the selection and adaptation of knowledge.

VII. **The End and Aim of Education:** 1. An ideal determines everything that goes into its realization: knowledge, reason, discipline, interest, and method.

NOTE.—The ideal meant is the personal one held by the pupil.

2. The greater the ideal the more useful it is to humanity; the more knowledge, reason, discipline, interest, it demands for realization.

3. The needs of society determine the work of the school. Put that into the school which society should have for its improvement.

4. The predominant need of society is character expressed in terms of citizenship.

5. The end and aim of citizenship is ideal community life.

6. The school should be an organization of ideal community life, in which every pupil is a citizen, or is becoming one.

7. The teacher is the organizer of the best society, and the creator of a healthy, normal, moral public opinion.

8. The nature and capacity of the pupil determine his personal relationship to the community (school) of which he is a member. Citizenship develops the best, all the best, and only the best in the child.

9. Knowledge is absolutely essential to the development of the citizen and the progress of the community.

10. The highest and most persistent incentive to learning, under the direction of an efficient organizer of society, is the desire to help others.

11. Every ideal determines the knowledge needed to realize it. The knowledge necessary to realize community life is the broadest, deepest, most comprehensive.

12. In all the practical work of life, correlation is always the common sense rule. Uncorrelated knowledge is not usable.

VIII. **Course of Study:** 1. The needs of a growing community life (school grades) is the only proper guide to the selection of subjects of knowledge and skill for the course of study.

2. The spirit of helpfulness is the only righteous incentive to all school work.

3. Ideal community life is always growing in reality and growing in outlook; therefore a true course of study is constantly changing in its adaptation to changing needs and growing ideal.

4. Under this ideal, expression in all its modes is using knowledge for the good of others. Study is preparation for use. Moral power is acquired by using knowledge for the best good of the community.

IX. **Concentration:** 1. Under the ideal of citizenship and community life, concentration may be defined as bringing to bear the whole being—personality, originality, research, reason—upon the realization of complete living in the school.

2. Concentration may be enhanced a thousand-fold by unity of purpose on the part of an entire faculty.

3. The study of the needs of community life is infinite in its possibilities. Under self-government, the ideal of society is growth. Anything fixed in method or system is impossible.

4. This ideal demands the closest study of the nature and possibilities of the child.

5. Each child becomes a member of society, a factor in civilization; he is led slowly and steadily to feel and understand his responsibilities as a citizen.

6. Concentration demands correlation. The question of questions is, what is the best knowledge to community life?—thus breaking down the unpedagogical barriers of classification.

7. Concentration is the economy of physical, mental, and moral action. The reason why students in general know so little is that knowledge, and not character, is made the end of education.

Notes on Psychology

NETTIE A. SAWYER

(Fall Quarter)

Statement: "I see" means I am conscious of an image.

Experiment: I experiment with books, hats, pencils, lamps, etc. Only when I am conscious of an image do I see a thing.

Question: Is there a state of consciousness without an image?

Experiment: I recall to memory a face, a saying, an act, a landscape—in every case I have an image—in the case of the saying, there may be more or less images according to circumstances. When I recall some quotation from a poem I simply image the contents of the extract, as in "The day is cold, and dark, and dreary."

When I reason I have images.

Example: I say: "All quadrupeds are four-footed. This animal has four feet, therefore it is a quadruped." Here I have vivid images in both parts. I experiment again with reasoning. I say: "This man has died; that man died. All men I have known have been under a certain age; therefore all men must die." I have images, though different from the above.

Again, I will to do a thing. I decide to talk. I have an image of the sounds of the words, and of the things I am going to talk about. I decide to walk. Here I have an image of the feeling of the ground I tread upon—or an image of the place through which or to which I am going.

I have a strong emotion; am angry with some one; am pleased because of some event; am pained at some sight, sound, etc.

Inference: From the above I infer that there is no state of consciousness without an image; but the nearest to the absence of an image is that state descrbied as "the blues, with nothing to be blue over," or as "happy without a cause." In every case, however, I have found that these emotions are connected with images in unconscious consciousness.

Question: Is a written word an object? Yes; it has length, bread, and thickness.

Statement: External causes of images are objects. Therefore a word is an object.

Statement: The external causes that create images are: First, words; second, the things for which words stand.

Question: Do all words call up images?

Experiment: I see written "pencil" and "bleistift." To some the second did not call up images. To me it did, but the French for pencil does not call up an image. By many experiments I infer that words call up images only as we are trained to connect them with that for which they stand.

Question: What kinds of external objects create images in our minds?

Experiment: I find two general kinds—those that make us conscious directly of an image and those that bring to our minds the thing indirectly; that is, symbols and the real things.

Question: What is attention?

Statement: It is the holding of an image under the stimulus of external objects. By repeated experiments I have verified this.

Question: How many modes of attention?

Experiment: I see a boy. Observation here is attention. I hear a bell. Observation here is attention. I smell a flower. Observation here is attention. I touch a ba l. Again observation is attention. In each case the object acts directly.

But if I see "boy," I read and do not observe. The same with "bell," etc. Nevertheless I attend. I hold an image under the stimulus of the object which is here a word (written). So reading is a mode of attention.

Again, some one says "bell" to me. I have an image under the stimulus of the spoken word, and this is an external object. The waves of ether are material things. The spoken word is a mode of attention.

Doubt: I have been wanting to use the picture as one of the modes of attention. I have nearly concluded (though not positively) that the picture does not deserve a place here.

I have experimented with pictures of landscapes. I believe they affect me as objects; that is, I enjoy the immediate scene I am looking at, and not the one the picture represents. I have experimented with pictures of animals with the same results. If I see a cat run after a mouse in a picture, it is the picture cat and mouse, and not some imaginary animals, which hold my attention.

Question: What is the function of a word?

Experiment: I said "that." It brought no image. I said "red." It brought a faint image. I said "rose." It brought a clearer image. I said "red rose." It brought a clearer image. I said "that red rose." It brought the clearest image so far. I said "that rose is red." It brought the clearest image of all.

At present I infer that the function of a word is not brought out in the isolated word always, but in combination with others. I would say that the function of a word is to create an image, or to combine with other words in doing so. The sentence is the unit, and not the word.

Question: What is the function of language?

Experiment: I listen to English. I understand. I listen to French. I do not understand, because certain sounds do not stand to me for anything—not for the images that are in the mind of the speaker. The function of language must then be to create similar images for those talking and hearing.

Explanation: Colonel Parker uses "attention" in a restricted sense to mean the holding of images under stimulus of external objects. Some authorities give it a wider sense.

Statement: Reading is imaging, and nothing else.

Doubt: I do not yet see this.

Experiment: I find that visual images are in all sentences where I find any images. I find many sentences where there are auditory images—images of smell, taste, and touch. The following has all I believe: "Although this orange has a crinkled skin it smells fresh, and I think will taste sweet."

So far, so good; but in the following sentence

I get no image: "The idea is the content of assertion, and without it assertion is nothing." (From *Hobhouse*, p. 88.)

Question: What is the difference between cursory reading and study?

Experiment: I read the Norse myth about Balder, at first quickly; my aim was to produce the new images as quickly as possible in order to get to the end; to see how the story was coming out. The result was, I did not get the connection of images; that is, I did not hold the first image and let it grow under the influence of the new ones. In studying it I did this, and got one big image in place of a lot of detached ones. I had it in memory by study, not before.

Doubt cleared away: It occurred to me that the reason I had no image in reading the sentence from Hobhouse was because I did not understand it. I began to get an explanation ready and images came immediately. I took the assertions: "The day is dark." "The snow is white." Here the ideas of darkness and whiteness are attached to some very definite thing, and are not intelligible till they are thus attached.

I am quite convinced that all reading for me is at the foundation imaging, and nothing else.

Former statement corrected: I said, "Visual images are in all sentences where I find any images." I do not think this is true. For example, in "The cry was loud," or better, "The noise was loud," I get an image of loudness and noise without seeing anything; it is purely auditory, I believe, and not attached to any visible thing.

Question: What is the fourth kind of attention? Pictures?

Statement: A picture may have the attributes, and many of them, of the thing it represents. It seems to have a double function: to stand for that thing, that is, symbolize it, and to give intrinsic interest on its own account, as suggested above. There seems to be a law that as one increases the other decreases.

Example: As a picture of a bear changes from a colored and fully worked out bear to a mere outline in black on white paper, the intrinsic interest decreases and symbolic interest increases.

We finally come to the map where there is no intrinsic interest, and all is symbolic. I believe the map is the fourth mode of attention, strictly speaking, that is, graphic symbolism by means of lines, and not words, and that the picture is really a combination of the first and fourth modes.

Question: How do images grow? Follow one in its growth.

Growth of an image: Wild canary. When I was a small child I saw some tiny birds in our currant bushes in a nest. They were naked, had large mouths and eyes. Some one said they were wild canaries. When I went to see them next time they were gone. I associated their going with the word "wild," and thought I had frightened them away. So my first image of a wild canary was a small, naked, flesh-colored, shy bird that built in currant bushes.

Some time later I heard it said that the wild canary and the yellow-bird were the same. My image then changed, the flesh-colored birds changed to yellow ones.

I next saw a yellow summer bird, and my image changed as to size. I got near it and saw some black on head, wings, and tail, and the color image was still more modified.

Only two years ago I heard it and also saw it sing for the first time. My image grew more.

I found in "*Bird Craft*," p. 140, by M. O. Wright, a description and picture. My image was stronger and more exact.

My present image of this particular bird is of a bird larger than a wren and smaller than an English sparrow; a bird which is yellow, with whole top of head black, and wings and tail black, but marked with white; of a shy bird that nests usually in maple trees rather than in currant bushes, and lives about the garden, singing sweetly. My image has grown by observation, by reading, by spoken words, and by pictures.

Question: What is attention?

It is study. It is holding an image and letting it grow.

Statement: You can have no new images. (This applies to adults only.)

Experiment: I see a red apple. I find in examining that my image contains elementary ideas of color and form. By experience I have associated a roundness of form with the apple. This present image is caused by this apple directly, and indirectly by other apples and round forms of past experience. Without the past the present would have absolutely no meaning.

Question: How do images grow?

Experiment: I recall the growth of bird image, before given. At first my image of the color was that of flesh-color. Some one said the canary was yellow. This word "yellow" creates an image in my mind. When I heard this said, I discarded the flesh-color, and connected the image of yellow with the image of form which belonged to my first image, and I had a new image. My image had grown by expansion. This is a synthesis of images.

Experiment: I see a certain design for the first time just now. At first I had only a general image—I mean the details were not worked out. I saw that it was a conventional design, made of leaves and flowers; that was about all. By holding this general image the details come. I see that the leaves are larger than the flowers; that the leaves are long and slender; that they curve upward in a graceful way. I see that the flower is round, and of a lighter color than the leaves. In other words, my first image has worked itself out clear. I have analyzed my first image by concentration.

I infer, therefore, that images grow by synthesis and by analysis; or, in other words, by concentration and expansion.

Question: What is the difference between a vague image and strong image?

Experiment: I think of the cardinal grosbeak. I know about how long it is, what color it is, what shape its head is, etc.; yet I have never seen one, but have only read about it. My image is not definite, I know, because I think every new red bird I see if of this length may be a cardinal grosbeak. My image is vague.

Two years ago I saw the scarlet tanager for the first time. I had walked five miles hoping to see it; so when it appeared in the woods I observed it most carefully, noting its exact shade, its length, the arch of its neck, the amount of black on wings and tail, its song, its flight, etc. I have a very vivid image of it, for I looked at it again and again, following it as far as I could. This is a strong image.

When I compare my images of the cardinal grosbeak and the scarlet tanager they are utterly unlike. The strong one corresponds in detail with the real bird. The other does not.

Statement: A strong image has many elementary ideas corresponding to the attributes of the thing imaged.

Question: What is the relation of expansion to concentration? Can one be without the other?

Experiment: In the design mentioned before, when I noticed the shape of leaves, flowers, etc., I must at the same time unite these separate images, otherwise it would not be a design in my mind, but only a lot of isolated images. This process is called concentration, merely because this seems to be the more permanent process, for I really have a unit in mind even when I look at its different parts.

In the case of expansion given above, there was concentration. Example: When I change the flesh-color for the yellow color, I first concentrate my mind on the color of my first bird, leaving out of consideration its size, form, etc. I must do this before I can replace the flesh-color by yellow. Again, as before, the name is given merely to designate the prevailing process involved.

I infer there is no concentration without expansion, and *vice versa*.

Question: Upon what does the value of reading depend?

Statement: Upon the clearness of images it brings from our past experiences.

Question: What is the difference between an object and a picture?

Answer: What is the difference between a real bear and a picture? And the mere outline?

The real bear has all the attributes of itself. The outline has a very few attributes; the picture more than the outline and less than the bear.

Statement: Pictures are universal language, because the elementary ideas are in the minds of all people; that is, they call up images to all.

Sculpture has more attributes than pictures. Colored picture has more than black and white.

Statement: Holding of images has an important place in all growth.

Question: What is the great natural means of holding images?

Colonel Parker explained it as motor-discharge.

For example, if I see an apple, a sight sensation passes along the nerves to the sensory center. This current disturbs the equilibrium of the nervous matter. There is an excitement, a disturbance which must be quieted. The only way it can be done is to let the outgoing nerves carry it off. There is a mysterious connection between the brain-cells and the mind. At any rate, the excitement of certain brain-cells is accompanied by certain mental images. Each time a brain-center disposes of this disturbance in a certain way, the more apt it is to do the same again, and thus bring again the corresponding mental image. It is only by means of this constant disturbing and quieting of the brain-cells that they grow, and thus that the corresponding images develop.

Question: Can you do anything without first imaging it?

Answer: I think not. That is, you must have imaged it once. It may be automatic now.

Question: How are images held?

Answer: By expression only. This is simply analogous with the motor-discharge.

Statement: The fundamental modes of expression are—

1. Gesture.
2. Voice without speech. (Expresses emotion.)
3. Speech.
4. Music.
5. Manual training.
6. Modeling.
7. Coloring.
8. Writing.

Statement: All expression has for its function the holding of images; that is, the intellectual side.

Statement: A strong image tends to find expression in self-activity.

Statement: The distinction between strong and vivid images is, that the vivid are colored by emotion.

Question: What mode of expression develops consciousness most? I shall have to think more before I answer this.

Question: Has each mode of expression a physical reaction? Does each mode of expression react on consciousness?

Answer: Yes. For example, in modeling an ear of corn from nature, I first get the image, then use my hands to objectify it. While doing so my hands get the power to respond more readily another time. Then conversely the work with the hands helps me to get more perfect images.

Question: What does exercise of all the modes of expression give?

Answer: A fully rounded development.

Question: What is the moral function of modes of expression?

Answer: I should say to create genuine feeling and avoid sentimentalism; that is, to connect proper action with feeling and thought.

Question: To what do we give attention?

Subjects of attention: 1. Geography, earth's present surface.

2. Geology, causes of present surface.
3. Mineralogy, composition of surface.
4. Meteorology.
5. Physics.
6. Chemistry.
7. History.
    a. Anthropology.
    b. Physiology.
    c. Psychology.
    d. Sociology.
    e. Archæology.
    f. Philology.
8. Biology.
    a. Plant-life.
    b. Animal-life.

All these subjects of attention are related.

Mathematical Geography

Zonia Baber

True geographic concepts are not composed entirely of plains, mountains, oceans, and other attributes of the earth's surface; the sun in its differing relations to the earth plays a most important part in the formation of such concepts. The difference in the winter and summer aspects of temperate North America, for example, would be appreciated with difficulty by an untraveled inhabitant of lowland equatorial tropics, inured to the monotony which results from a uniform twelve-hour day. Although twice in the year he would cast no shadow at noon, and during one-half of the year his shadow would fall to the north, while during the other half it would fall to the south, still the change would not be sufficiently marked to break the dull uniformity of daily and yearly existence. A cold, dark day in which the sun did not appear above the horizon, even at noon, would seem no less wonderful to him than a day in which the sun made his entire circuit throughout the twenty-four hours without dropping below the horizon even at midnight.

In our latitude the constantly changing picture stimulates interest in causation. Even the young children are curious to know where the sun goes when it drops below the horizon. The little five-year-old child who asked how the year could go on making days showed an early and intelligent interest in astronomical geography.

All primitive people, or those who try to account for natural phenomena by mythical rather than by scientific methods, have shown a deep appreciation of the phenomena of sunrise, sunset, spring and autumn equinoxes, winter and summer solstices, as shown in their festivals and folk-lore.

It would not seem strange if a people living in a tropical climate were less rich in myths setting forth the relation of the sun and earth than a more northern folk, to whom the coming of the sun meant perhaps the relief from a long, cold famine.

It is not strange that a people geographically circumstanced as are the northern Norwegians should wait with restless eagerness and receive with great rejoicing the first appearance above the southern horizon of the ruddy face of the sun.

When a pupil can in imagination place himself in any latitude, on any day of the year, and describe the sun's apparent path in the heavens, he has a key to much geographic knowledge.

The lack of accuracy in observation of the sun's path in the heavens in his own locality is the great obstacle in the way of the pupil's imaging its apparent movements in other latitudes.

Even the primary pupils are interested in making and recording accurate observations of the sun, if there seems to be a necessity for such knowledge, as is shown in the correspondence of the grades with foreign children.

(See geography outline, December COURSE OF STUDY.)

The record of the length of the noon shadow of a certain object, made at regular intervals, will not only impress one with the fact that the shadow lengthens and shortens, but with the peculiarities of the movement.

The exact time at which the sun crosses

the observer's meridian can be obtained by recording the length of the shadow every few minutes before and after noon; the shortest shadow will be the noon shadow, and will fall on a north and south line.

Fifth Grade finding noon shadow and obtaining declination of sun.

This record, together with that of the length of the day, position of the sun on the horizon at rising and setting, kept for one year, would afford an excellent basis for pupils mature enough to use it for imaging the implied relations of the sun and earth. If he has established the causes of the phenomena in his own locality, he has discovered the same for the entire earth.

(See January COURSE OF STUDY, page 429—Mr. Myers's Outline on Astronomy.)

Pedagogic School

Continue unfinished work outlined in January COURSE OF STUDY.

Past geographies of North America.

How are the past aspects of a continent obtained?

What are the evidences that North America has had different coast-lines?

What are the evidences that the continent has passed through many changes of climate?

What proofs are there that the topography has changed?

Visit Field Columbian Museum. Study geologic exhibits.

What distinguishes the geologic epochs?

Can you trace any evolution of life in the paleontological exhibit at the museum?

Considering the maps of the past geographies of North America as the maps of the archæan, silurian, carboniferous, cretaceous areas, etc., what inference in regard to the development of the continent seems just?

Would you predict a larger or smaller future North America?

On Thursday morning, February 28th, Prof. R. D. Salisbury, of the University of Chicago, will lecture to the pedagogic school on "The Evolution of North America."

References: Dana, *Manual of Geology;* Geikie, *Text-Book of Geology;* Scott, *Introduction to Geology;* Tarr, *Elementary Geology;* Shaler, *Story of Our Continent.*

Pedagogic questions: Is the knowledge of the geology of a region of value in the study of its present geography?

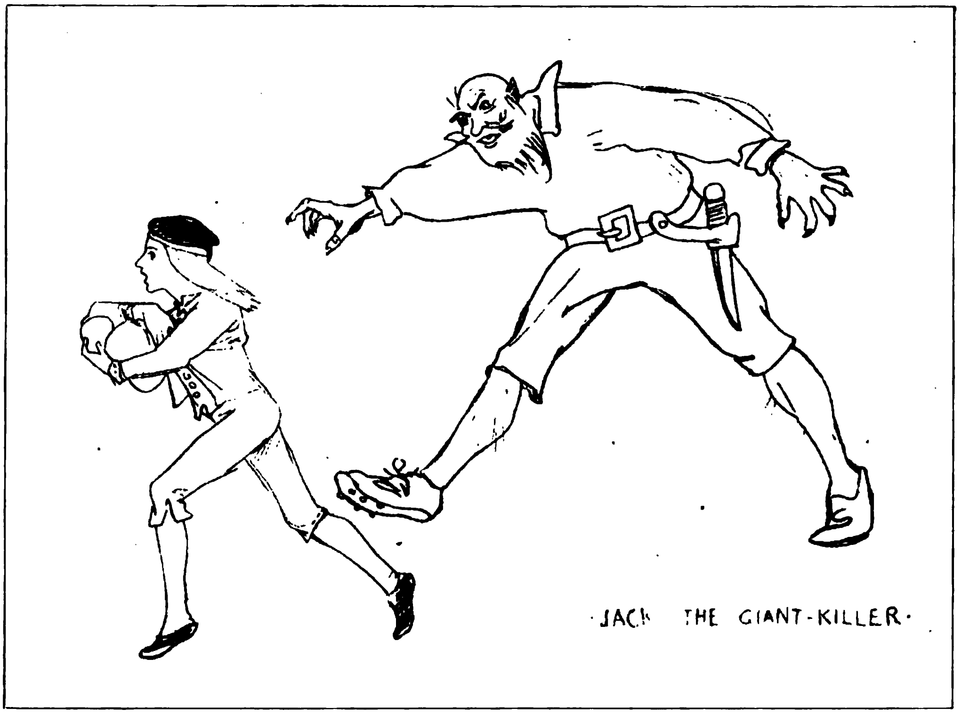
At what age are children interested in the causal aspect of things?

In teaching the continent of North America to fifth-grade pupils, for instance, what part of its geology, if any, would you present?

How would you introduce it?

Art

John Duncan



We shall make a call for art expression (drawing and modeling) in connection with the work done in Literature in the Grades and Pedagogic School. (See outline of Dramatic Art, by Miss Fleming.)

In the Fifth Grade, Washington Irving's story of Rip Van Winkle was read the other day, and then the children were turned loose upon the blackboard. In a few minutes we had a dozen drawings representing the various incidents of the story—Rip condoling with his dog "Wolf"; the first meeting with the dwarf; the solemn bowling party; Rip asleep; his awakening; and his entrance into the village. The teacher of drawing then made a larger and more elaborate picture in color before the children, incorporating their suggestions as they eagerly watched its development. We found when we started to draw that a good many points of the story had escaped us, and that it was necessary to make a closer study of the text. We turned again and again to the book, to see just what this man's face was like, and how that other one was dressed. In this way the drawing was done to dictation, and we did not rest satisfied till we arrived at a close correspondence in every detail between the picture and the narrative.

The students of the Pedagogic School are discussing child literature; what are the best stories to tell children, and why. Together, too, with their work in History—the study of elementary occupations—they are giving some attention to the earliest beliefs of man incorporated in the myths of primitive folk. These child stories and early myths are found to converge, and the nursery tales of the type of *Jack and the Beanstalk*, and *Goldenlocks*, and *Cinderella* are seen to be survivals from that dim prehistoric past handed down from generation to generation.

From these first favorites we may rise to broader and more beautiful conceptions, containing a greater volume of truth and nobler ideals of conduct. In the mythology of Greece a higher level is attained, and in the legends of the saints we reach still higher, till we arrive at the best ideals of our own day and stretch forward to those

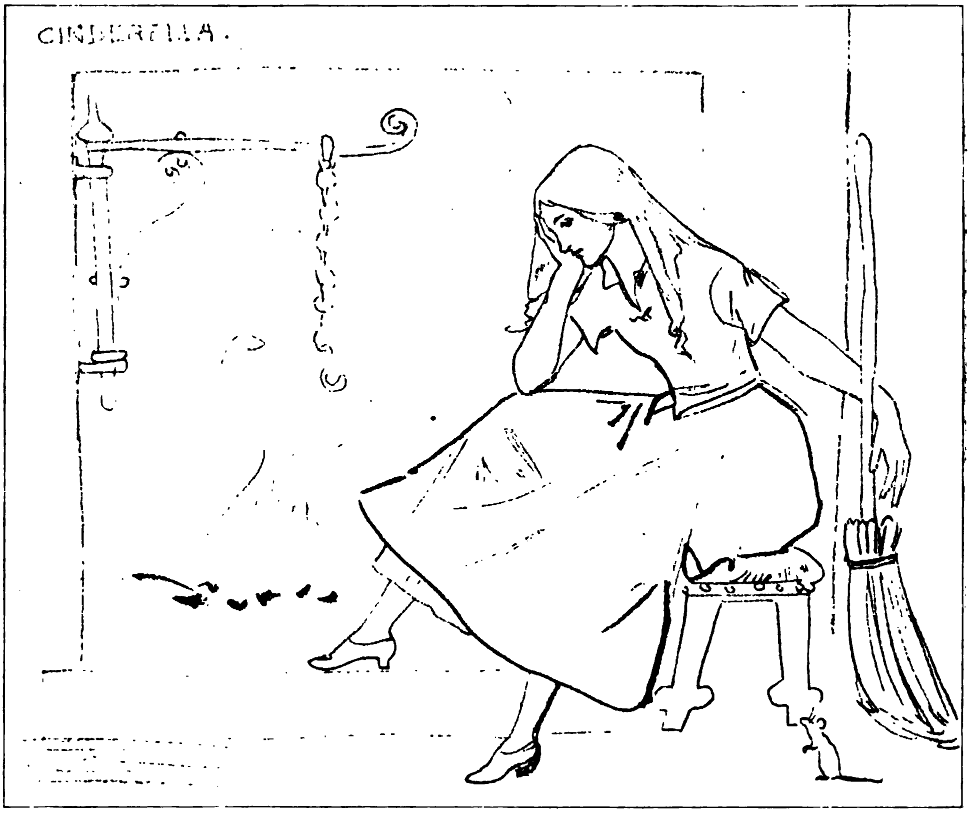
ATHENA AND EROS—DUTY AND INCLINATION

of the morrow. In the Pedagogic School we shall illustrate this literature with drawings on the blackboard. Some ability to make original illustrative pictures is a valuable acquisition to the teacher. Even a little skill is immeasurably better than none. The audience that the teacher will have by and by is imaginative enough to overlook many shortcomings in the drawing, reading through the crudest and slightest sketches the intention of the draughtswoman.

The teacher is her own severest critic. Our principal difficulty has been to get the members of the Pedagogic School to look with any degree of toleration upon their own performances. They erase their drawings immediately, lest any one should see them. They are not content to draw like little children, and many are unable to do any better than little children. This discovery of their incompetence is a great humiliation to them, a severe blow to their *amour propre*. Only the most courageous and modest accept themselves without remonstrance.

And yet we have had some encouragement to believe that the desired power is lying latent in most of the students, needing but exercise to bring it into freedom and happiness. Many have not drawn since they were children, and naturally feel helpless enough now; but if they will only persevere the habit can be formed again and become a second nature.

We are not willing to postpone the attempt to do creative work till such time as the students have gained sharply defined mental images and a developed technical skill, but believe that if the demand for expres-



sion is made the students will necessarily, consciously and unconsciously, set about the acquisition of these images, and will gain the required skill in the actual working out of their own conceptions.

But, one may object, how can the student draw if she has no definite mental images? Is there not here a place for the life-class? Had she not better begin by drawing from the model, and she will by and by be better able to launch out into original work?

It is too slow and round-about a process. We want a living, moving, expressive art, and the ordinary student who has passed through the life-class is no nearer the wished-for end than the veriest beginner. Let the student instead express the vague and crude images she has, and she will feel the need for more accurate ones.

Opportunities for clearing up her artistic ideas are to be found everywhere. In school itself, is she not surrounded with speaking, dramatic figures, from the happy little dancers of the kindergarten to her fellow-students in the Training Class? In the street, in the car, in the park, and at home are inestimable chances for studying humankind. How infinitely better are these animated models, than the dull, self-conscious models of the life-class! If the life-class has a place it is not just here. It will be of service when a closer, more analytical study of form is called for than is necessary or desirable at the stage in which most of our students find themselves.

Let us carry sketch-books and consider the world about us as a great life-class, where we can learn all, and immeasurably more than all that we can find time or opportunity to express.

Constructive Work in History

Emily J. Rice

MYCENÆAN DECORATIONS

In presenting the material of history, the connection between the past and the present should always be made clear, in order that the child may interpret his own experience through the accumulated experience of the race. Unless this connection is made, the child finds nothing in the subject-matter of the history lessons which helps him to solve the problems of his every-day life or furnishes any motive for work. He is constantly reaching out for the means of answering questions in regard to his social environment. To be of value to him, historic material must be put before him in such a way that he will see its relation to his own thought and action.

It is also necessary that the child should express his knowledge in order that it may strengthen his power to think and to act. The past will be full of meaning to him in proportion as he expresses it in terms of his own life. We must learn to use not only dramatic representation, but also clay-modeling and painting, drawing and designing, making and building.

As far as possible, all hand-work should have social value, a use that children can see. They should feel that they are making things because they need them, and not as illustrations of what others have done. The children are thus actual partakers in the work of the world. Interest in the processes of manufacture may lead them to construct objects as they were made in the past, but even here they should be inventors rather than imitators.

The study of industries may be made a series of problems, the teacher presenting conditions and children drawing their own conclusions. If the children are able to use books, these may supplement the work at every step.

The accompanying illustrations show

MYCENÆAN DECORATIONS

some of the work of our own school in clay-modeling. The reproductions of vases illustrate pottery designed by members of the pedagogic class, and represent a part of last month's work. The representations of casts illustrate the work in clay of the Fifth Grade children who have been studying Colonial history, and of the Sixth Grade children who have been studying China.

The first year High School students will make pottery during the month of February. The decorations in relief will be adaptations of the conventional patterns found on the pottery of the Mycenæan period. It will be observed that these students have just finished the study of the Mycenæan Age.

Possible Outline for the Study of Pottery: (This is given as an illustration of what may be done in any one of the arts. The study will occur over and over again in connection with the different historic people discussed.)

The children are familiar with the art in the dishes used at home, and with the material in their modeling. Let them suggest things that are made of clay. Show them different kinds of china, tiles, vases. Lead them to conjecture the cause of the invention of pottery. Let them mold dishes and decorate them with patterns of their own invention. Drying in the sun and baking in an oven will be useful experiments. Let the children note carefully results of each process. Compare their work with Indian pottery; it will be very much like that of primitive people. Compare with modern pottery. They will see the difference in shape and smoothness of surface.

A CHINESE SCHOOL

WORK OF PEDAGOGIC CLASS

Study the potter's wheel. Show its development from one horizontal wheel, hand-turned, to two horizontal wheels, lower one turned by foot. Let the children make a simple one. Let them use this for making better vases than they could make without it.

Stories of Luca della Robbia and Palissy will illustrate the discovery of the art of glazing. *The Porcelain Stove* (Wiggins) is a useful story, as is also *Robinson Crusoe.* The origin of pottery is well shown in Robinson's need of dishes in which to keep grain dry and to cook, and the processes of making and learning to bake the pottery are well illustrated in this story. Let the children do the work that Robinson did, and get, as far as possible, the benefit of his experiences.

Greek Pottery: If the story of the Odyssey or any part of Greek life is used, Greek pottery may be introduced as a study to continue the development of the art.

PRISCILLA

Here beauty of form may be shown by pictures or vases themselves, and the decorations made a means of showing the life and thought of the people. The children should mold Greek forms, and decorate their vases with Greek patterns. (The Art Institute has good illustrations.)

Aztec Pottery: In connection with Colonial history, we come in contact with the higher forms of Indian life in this country. Here we may show the development of the art of pottery again, and trace the difference between the best Indian pottery and Greek vases, and show modern vases. The Field Museum will furnish good illustrations. The children should copy the specimens seen there.

The Middle Ages and Modern Art: Here we come again to the development of the art of glazing. The stories of Luca della Robbia and of Palissy, of the beginnings of Dresden, Delft, and Wedgwood, and of the Portland vase may be found useful. Longfellow's poem, *Keramos,* may be adapted as a story to be told with many illustrations in pictures and objects. Older children may read this poem profitably.

References: Binns, *The Story of the Potter;* Luca della Robbia, *Pottery,* (Britannica); Lamartine, *Celebrated Characters* (Palissy); *Stories of Industry,* vol. 2; Nelson, *The Story of Palissy the Potter* in *Records of Noble Lives;* Chapman and Hall, *The Industrial Arts;* Mason, *Origins of Inventions;* Ratzel, *History of Mankind.*

Excursions: To china shops; ceramic rooms, and art galleries.

Speech, Oral Reading, and Dramatic Art

Martha Fleming

Pedagogic Class: The problem to be worked out in this class, which is so large that each individual receives less than an hour of time during the quarter, is how to make each one feel responsible for the work and take an active part to such an extent that he will gain some skill in expression. This could not be done by lectures or by any study of literature that stopped short of actual oral expression. In the hope of meeting the need for more opportunity, the play of *Hamlet* was selected. The class would have tired of any literature except the greatest before the point of expression could be reached.

The class read the play until each one was able to present the argument in a paper which could be read in five minutes or less. Each scene was then given out to a group corresponding in number to the number of characters in the scene. Another student was made stage manager of the group. Each group presents the scene, committing the lines, and giving the action that in their judgment it demands. The rest of the class watches the work closely, and at the close of the presentation the whole scene is discussed — the good things noted, suggestions made, and criticisms offered. In this way we have worked through three acts. The result has been a careful, independent study of the text, and an effort at interpretation which has been marked with much true feeling. The interest in the whole class has been intense.

Shakespeare was an actor; he knew the stage; the play was written to be acted. The simple reading of it cannot give its full beauty and meaning. The eye as well as the ear must be satisfied.

This work will be continued through February, and if possible a closer study made of some of the scenes. A character study of Hamlet will be written by each member of the class.

In connection with the History and Art departments, the story of *The Sleeping Beauty* will be told to the class. Tennyson's poem, *The Sleeping Beauty*, will be read orally. Each of the class will write the story as it appeals to him individually. Some practice in story-telling will follow. Other fairy stories will be treated in the same way, and the little poem, *Up the Airy Mountain*, read orally by the class. It is hoped that something original in both literature and art will be the result of this part of the month's work.

French

Lorley Ada Ashléman

There can be no one set method for the study of a language. The soul of the method is the image-growth. Image-growth is never the growth of one image to the exclusion of another, nor do any two images grow in exactly the same manner.

To know a language is not simply to be acquainted with elements of grammar (for grammar must be learnt by the language, and not the language by the grammar), and to have read with more or less trouble and difficulty one or two texts from the many treasures which the French literature possesses, but it is to have an acquaintance with the genius of the language, the genius of the people—to feel a word instead of translating a word.

Why should the thought of a language come through the intermediary of your own language? Many only read English into which more or less laboriously they change the French words. It is needless to dwell on the fact that such readers get the entire thought from a translation, usually a very bad one, and never can they have any exact perception of literary excellence in French, nor distinguish shades of meaning different from those to which they have been accustomed in English.

Is it possible to have genius and feeling at the beginning of the study of a language? Can it be made anything but a fine gymnastic memory exercise?

Gouin's method has made a great step in advance, when compared to the learning of a language by the translating and memorizing of sentences found in methods that preceded his; as, for example, "The trees of the good baker's wife. Have you a hat? No, I have a broom." But, unfortunately, the Gouin method is more or less artificial. The language study is isolated. The lessons, though apparently forming a connected whole, are only a cunningly arranged vocabulary. The vital part is missing—true correlation with other educative interests.

A knowledge of the every-day speech

of a people is necessary for the intelligent appreciation of its literature. The success of acquiring the every-day speech will come only when each and every teacher (and those in charge of materials and hand-work are especially needed at the beginning of the study) helps the language teacher by himself teaching in the foreign language.

Cooking, sewing, manual training; the formation of mountains, rivers, and plains; the modeling and study of flowers, trees, and animals permit the child to grasp sentences as a whole with very little intermediate English. In the study of these different subjects has the student not already unconsciously assimilated the principles underlying the literature of the language?

You ask, if a child in sewing uses the French vocabulary instead of English, has he any greater mental development, a clearer image-growth?

As yet I cannot truthfully answer yes, but I truthfully feel yes.

There certainly must be growth in the assimilation of new idiomatic forms which carry about them an indefinable atmosphere of another people. Would not the inevitable comparison of two idiomatic language forms enhance the comprehension of a child's own language?

Supposing we admit that for the moment the image-growth is no greater. In sewing, the children are making a work-bag to hold their sewing materials. They themselves thought of it, but the thought was inspired by the teacher. The bag is not finished the day it is begun, neither is the work in sloyd, nor in clay-modeling. Very few children will yearn for a mathematical image-growth if some inspiration has not given rise to the feeling of the need. Why should language-study be treated differently?

Just as surely as the work-bag is finally finished, just so surely does the child gain an insight into French literature which will make of him a broader, more sympathetic agent in the evolution of society.

In this country, particularly in the city, every teacher should be able to teach in one living language besides her own. *This can be done.* Nor is it so difficult as it seems. If in every school where languages are taught the teachers began the study with the little children, they would soon find themselves capable of teaching in their own classes. The special teacher would then bend all her energies in bringing the work continually to a higher and higher level.

Not only are teachers at present ignorant of all languages except their own, but German, Italian, and even the little bit of French existing in Chicago are being buried on account of ignorance.

Again and again it happens that father and mother are German, and would like to speak German, but the children are ashamed of their tongue and refuse to speak it. The second generation almost entirely forgets the mother-tongue. This is a dreadful, a really terrible condition of things.

What is the cause? The scorn and laughter the poor little foreigner meets with in the new country—scorn and laughter caused by ignorance of the language.

Now if the language-growth had gone hand in hand with the other image-growths of the American child, would there not be sympathy and understanding for the little foreigner? His coming would be a help, an inspiration. He may perhaps have the joy of feeling that he is not only receiving, but that he is to a certain extent also giving.

Moreover, it is impossible (I am speaking now of the public schools, in which there are many children of foreign parentage) for the teacher to have full understanding of the character she is helping to develop if she is incapable of understanding the child's language, and through it his emotions, his longings, and his spirit.

If other schools in America and in Europe would but join the Chicago Institute in its effort to teach languages in this way, the work would almost do itself. A student on reaching the restless high-school years could go abroad and pursue his studies in a foreign land without breaking up his school-life. To a foreign child it would mean even more than to our own. In such a plan teachers might exchange as well as pupils.

We read Europe as a country of the past. Such a school system would save it, and make it, as well as America, a country of the future. Such a system would help to make us all world-citizens, and as this unity of the human race approached, languages would mingle and intermingle until the strongest and best in each would go to form the perfect speech of man.

French Reading Lessons

Descartes

Je veux apprendre à l'homme à penser par lui-même! Ah! C'est à la recherche de la *vérité* que je veux consacrer mon temps, ma fortune, toutes mes facultés!

Personnages: Descartes, Mersenne

Mise en Scène.

Personnages: Descartes, Mersenne.

Descartes debout devant la cheminée.

Mersenne assis devant la cheminée lit une lettre à haute voix.

Mersenne. Galilée est coupable d'avoir émis cette opinion: Le Soleil est immobile, c'est la terre qui tourne. Le pauvre homme est arrêté, emprisonné, peut-être même torturé, en tout cas il sera forcé d'abjurer.

Descartes. Mon Dieu, tu dis qu'il est emprisonné, torturé! Ah! Il faut que je brûle mon "Traité du Monde." (Il sort précipitamment puis il rentre tenant son "Traité du Monde" à la main, il se promène avec agitation, puis il s'approche de la cheminée et se hâte de le brûler.) Pauvre Traité, pauvre Copernic, c'est votre système! Mais il faut que je songe à l'avenir: je travaille pour les hommes pas encore nés; la réputation pour les vivants me préoccupe peu. (S'asseyant dans un fauteuil.) Ah Mersenne, *je pense* donc *je suis*, mais, mais le cœur a des raisons que la raison ne connaît pas!

Pascal

Toute notre dignité consiste dans la pensée. Travaillons donc à bien penser, voilà le principe de la morale.

Mise en Scène.

Chambre de travail chez le père de Pascal. Pascal, âgé de douze ans, assiste avec curiosité son père qui écrit un traité de science.

Pascal. Papa, qu'est-ce que c'est que la géométrie?

M. Pascal. Mon enfant, la géométrie apprend l'art de faire des figures exactes et de trouver des proportions qu'elles ont entre-elles. (Pascal s'assied derrière son père. La réponse de M. Pascal le jette dans la rêverie la plus profonde. Tout à coup il se lève, il renverse presque le siège de son père, vivement il s'empare d'un morceau de charbon, et se met à tracer des figures sur le carreau.)

M. Pascal. Que fais-tu mon fils?

Pascal. Je cherche ce que valent les trois ouvertures de cette figure! (La figure était un triangle, l'enfant cherchait la valeur des trois angles.)

Pascal. Ceci, mon père, (c'était un cercle) j'appelle un *rond*; cela (c'était une ligne) j'appelle une *bare*. (On frappe à la porte, M. Pascal ouvre la porte, il voit un de ses amis, mais épouvanté de la puissance du génie de son fils, il demeure immobile

et sans voix. Il pleure. L'ami croit à un malheur.)

L'Ami. Mais qu'avez-vous donc, M. Pascal? Vous est-il arrivé un malheur?

M. Pascal. Non, non mon cher ami, je pleure de joie! Avec une simple définition, mon fils vient d'inventer les mathématiques.

La Fontaine

La Fontaine, dans' un fauteuil. Il est malade, air languissant. De temps en temps il détourne la tête pour mieux voir Mme. de La Sablière, qui arrange des fleurs dans un vase.

Domestique. Madame, Monsieur Boileau et Monsieur Racine désirent vous voir.

Mme. de la Sablière. Faites les entrer. (Elle va à la porte. Boileau et Racine entrent.)

Racine. Nous venons exhorter La Fontaine à songer à sa conscience, il a de grandes fautes à se reprocher.

Mme. de la Sablière. Lui, Messieurs, il est simple comme en enfant. Si'l fait des fautes, c'est donc par bêtise plutôt que par malice! Ne le tourmentez pas!

The children, in dramatizing their stories, were troubled with the verbs, the tenses, particularly the descriptive and historic past. They asked to have a few lessons devoted particularly to a discussion of the verbs. The following reading lesson is the result of the children's questions and answers:

Jean. Je ne comprends pas très bien l'emploie des temps. Je confonds aussi les auxiliaires. Veuillez bien nous faire la leçon sur les verbes aujourd'hui?

Mlle. Guinand. Certainement! Il vaut bien la peine de passer quelques heures à faire connaissance avec la partie du discours qui donne le sens et la vie, qui est l'âme de la phrase. C'est le verbe qui existe, qui agite, qui sent, qui souffre. Jeanne, dites moi combien de temps il y a dans l'indicatif.

Jeanne. Je crois qu'il y en a huit.

Mlle. Vous avez raison. Quels sont ces huit temps?

Jeanne. Le présent—

Mlle. A propos, qu'est-ce que c'est que le présent, Robert?

Robert. Le présent marque le moment où l'on parle, n'est ce pas, mademoiselle?

Mlle. Oui Robert, quel autre temps pouvez-vous m'indiquer?

Robert. Le passé et le futur.

Mlle. C'est cela. Avons-nous un ou deux passés en français, Hélène?

Hélène. Je crois qu'il y en a deux, mademoiselle, mais je ne les comprends pas.

Mlle. Nommez moi ces deux passés.

Hélène. L'imparfait et le passé défini.

Mlle. Eh bien, un passé qui est défini est un fait qui est passé, il marque à quel moment même du passé le fait s'est accompli. Nous sommes sûrs du passé de bien peu de choses. Il arrive qu'en parlant de la naissance, de la mort, de faits historiques, nous pouvons employer le passé défini. Il nous faut alors un autre passé, lorsque nous parlons de quelque fait commencé et qui peut continuer. Par exemple, je vous parlais hier, c'est bien passé, mais je vous parle de nouveau aujourd'hui. Cet autre passé, c'est l'imparfait, un passé imparfait.

Voici, ce qu'en dit Monsieur. Sauveur. "C'est le temps qui marque qu'un fait qui était en voie de s'accomplir au moment où un autre fait passé s'est accompli ou bien au moment ou un autre fait passé allait s'accomplir."

J'écrivais sur le tableau noir lorsque mademoiselle m'a questionnée.

J'écrivais sur le tableau noir. J'avais commencé. Je continuais quand vous m'avez fait votre question au sujet des verbes.

Une action qui dure, une action qui se

répète souvent est marquée par l'imparfait —un temps passé, descriptif, narratif.

Comprenez-vous ce que je viens de vous expliquer?

Hélène. Oui mademoiselle. Je vous remercie de votre explication.

Mlle. Il nous reste encore le futur, qu'est-ce qu'il marque.

Jean. Qu'un fait aura lieu dans un moment qui vient après celui où l'on parle.

Mlle. Très bien, nous avons donc le présent, l'imparfait, le passé défini, le futur. Ces temps sont-ils simples?

Jeanne. Je crois qu'oui, mais je ne comprends pas très bien la différence entre un temps simple et un temps composé.

Mlle. Dans un temps simple l'affirmation est marquée par la flexion du verbe; j'écris, j'écrivais, j'écrirai.

Les temps simples sont formés d'un seul mot.

Les temps composés sont formés d'un auxiliaire et du participe passé du verbe.

Le temps composé du présent est le passé indéfini qui marque que le fait a eu lieu dans un moment indéterminé avant celui où l'on parle.

Le temps composé de l'imparfait et le plusque parfait, qui marque qu'un fait s'est accompli à un moment quelconque avant un autre fait, qui est lui-même passé.

Le composé du passé défini est le passé défini est le passé antérieur, qui marque qu'un fait s'est accompli à un moment déterminé, au moment qui a précédé immédiatement un autre fait qui est lui-même passé.

Le composé du futur est le futur antérieur qui marque qu'un fait futur s'accomplira avant un autre fait futur.

Voilà qu'on sonne! nous continuerons cette leçon la semaine prochaine.

Je vous excuse, mes élèves.

* * * * * *

Mlle. Nous avons bien réalisé vendredi dernier que pour être à même de bien conjuguer un verbe il nous faut comprendre l'auxiliaire, le verbe qui aide à conjuguer les autres verbes.

Combien de verbes serviteurs, d'auxiliaires avons-nous, Jeanne?

Jeanne. Deux—avoir et être. Avoir est le seul verbe qui se conjugue sur lui-même, n'est-ce pas, mademoiselle? Parceque l'auxiliaire être est conjugué sur avoir.

Mlle. A quelle famille de la nation verbe appartient l'auxiliaire avoir, Robert?

Robert. Je ne sais pas.

Mlle. Est-ce que personne ne peut me le dire?

Jean. A la troizième mademoiselle, celle qui a *oir* pour terminaison.

Mlle. Que voulez-vous savoir, Henri?

Henri. Je ne comprends pas terminaison.

Mlle. Veuillez le lui expliquer, Hélène.

Hélène. J'essayerai mademoiselle.

Le verbe se compose de deux parties bien distinctes, une partie qu'on appelle radical ne change pas, l'autre partie qui change continuellement s'appelle terminaison.

Il est toujours très facile de trouver le radical d'un verbe donné, si l'on met le verbe au présent de l' infinitif et si l'on retranche la partie qui indique à quelle conjugaison il appartient, par exemple, aimer, retrancher, la terminaison *er* et vous avez le radical *aim*, qui ne change jamais.

C'est clair, Henri?

Henri. Oui, cependant je ne comprends pas encore les familles du verbe.

Mlle. Eh bien. Jeanne vous les fera comprendre.

Jeanne. En Français tous les verbes qui se terminent à l'infinitif en *er* appartiennent à la première famille, c'est à dire à la première conjugaison, comme aim*er*.

A la deuxième conjugaison appartiennent tous les verbes qui se terminent à l'infinitif en *ir*, comme fin*ir*.

La troisième famille comme je viens de

vous le dire se termine à l'infinitif en *oir*, comme recev*oir*.

La quatrième se termine à l'infinitif en *re*, comme rend*re*.

Mlle. Bravo Jeanne. J'écrirai maintenant la conjugaison du verbe auxiliaire avoir sur le tableau noir.

Avoir, ayant, eu, ai, eus.

Mlle. Que voulez-vous savoir Jeanne?

Jeanne. Qu 'est-ce que cela vient dire—avoir, ayant, eu, ai, eus?

Mlle. Votre question est opportune.

On distingue dans les verbes des temps primitifs, ces temps servent à former les autre temps, qu'on appelle temps dérivés.

Il y a cinq temps primitifs.

Le présent de l'infinitif.

Le participe présent.

Le participe passé.

Le présent de l'indicatif.

Le passé défini.

Le présent de l'infinitif forme deux temps: Le futur et le conditionnel.

Le participe présent forme trois temps: Le pluriel du présent de l'indicatif, l'imparfait de l'indicatif, le présent du subjonctif.

Le participe passé forme tous les temps composés.

Le présent de l'indicatif: L'impératif par la suppression du pronom et l'on retranche *es* finale à la deuxième personne du singulier dans les verbes de la première conjugaison.

Du passé défini on forme: L'imparfait du subjonctif.

Mlle. Oui. Hélène, vous avez encore une question à m'adresser?

Hélène. Oh! c'est ce subjonctif, jamais de la vie je n'y verrai clair.

Mlle. Guinand. Ne dites pas cela, Hélène, vous arriverez bien à bout de cette difficulté. Mais aujourd'hui ne parlons plus de verbes. L'emploi du subjonctif sera pour une autre leçon. Prenons "La Belle Nivernaise" et lisons quelques pages. Ce sera le dessert de notre leçon.

Physical Training

Carl J. Kroh Caroline Crawford

It is the purpose of the Physical Training Department to outline by the close of the year a graded course of gymnastics, adapted to the various grades. This course will be based on the following divisions of subject-matter:

I. Tactics. Order Exercises: Relative positions. Movements of the individual, rank, column. Movements on place; from place. Formation of ranks and bodies of ranks; columns. Formations in and of ranks; transformation of bodies, etc.

II. Free Standing Movements and Exercises: Exercises without the use of apparatus. Movements of the head, shoulders, arms, trunk, legs, feet. Elevation, flexion, extension, rotation, circling.

III. Light Gymnastics: Free standing movements and exercises with the use of hand apparatus, as dumb-bells, Indian clubs, wands, poles, rings, elastic bands, sacks, balls, etc.

IV. Apparatus Gymnastics: Exercises on gymnastic apparatus, as horizontal and parallel bars, ladders, rings, poles and ropes, round swings, vaulting machines, etc.

V. Athletics: Jumping, running, pole-vaulting, putting the shot, etc.; wrestling.

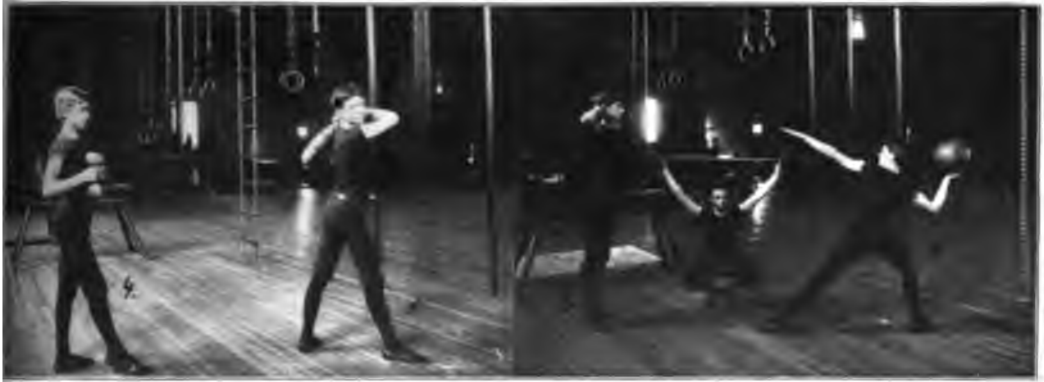
VI. Plays and Games—recreative and competitive. Antagonistics.

VII. Special Work: Foil, sword and bayonet fencing; exercises with the single-stick; boxing, etc.

VIII. Remedial work.

Defensive exercises, as fencing and boxing, preparatory to special practice, are included under I, II, and III.

Work designated assistive, resistive, cooperative, as physical work without apparatus, implies the reliance of gymnasts upon each other in the execution of exercises; assistance



or resistance being required of one or the other, or several—according to the purpose intended. The substitution of pupils in lieu of gymnastic apparatus includes work under this head.

Esthetic, "artistic" gymnastics find their highest expression in gymnastic compositions and "roundels," suggestive of interesting "themes." They include tactics and activities illustrative of definite gymnastic thought, generally accompanied by music or singing.

Fancy steps are derivations of the forms of exercise occurring under I and II, with rhythmic changes in execution. In their execution the body as a whole participates, as in walking, gliding, skipping, hopping, bounding, etc. They are considered in their regular place in the order of adaptations.

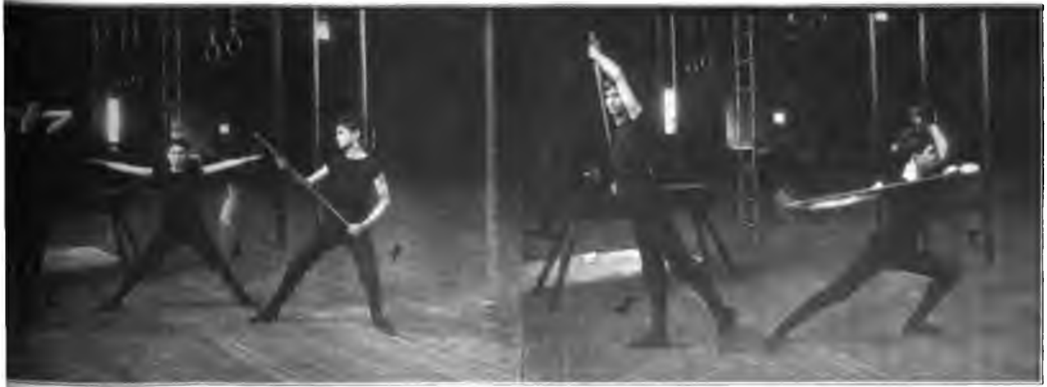
Remedial work, a special form of work, is applied to defective and nervous children. As corrective work, it includes work for most ordinary defects, superinduced by forced durance in schools, etc. It consists of movements, free exercises, standing, sitting, lying; of assistive and resistive work, carefully adapted and prescribed with reference to individual needs.

Free Exercises

Free standing movements and exercises of the first order consist of: Positions and simple movements; simple exercises and combinations; complex movements and exercises; and combinations.

Movement forms include elevation, as of the arms and legs; flexion and extension; also rotation and circling of the head (neck), trunk, arms, and legs; turn-bending of the head and trunk. Other forms, as stretching, swinging, striking, and thrusting, imply variations in modes of execution.

The basic positions embrace: (1) Half-stride positions, the fundamental and



Positions shown in cuts: (1) half-stride; (2) fundamental; (3) close-standing; (4) step; (5) half-standing; (6) stride; (7) lunging; (8) reverse-lunging; (9) fencing; (10 and 11) tip-toe and bent-knee positions.

close-standing positions, step positions, and half-standing positions; (2) stride positions, lunging positions, reverse lunging positions, fencing positions. These positions, with modifications, are repeated with heel-elevation, single and double knee-bending, and with heel-elevation and knee-bending combined.

Starting positions of the arms, used in connection with the different movements of the body and its parts, are: Arms next sides, hands grasped backward, hands grasped backward with arms bent, hands placed on hips, arms bent to thrust, arms bent upward, hands placed on the chest, ditto on the shoulders, ditto behind the neck, single and double arm extensions forward, sideward, and upward.

The order or succession of types of exercises suggested for lessons consisting exclusively of free standing movements and exercises, designed to bring into use the various groups of the entire muscle-system with each recurring lesson, was stated in the November issue of the COURSE OF STUDY.

The order of direction followed in the execution of simple and complex movements and their combinations, when not otherwise determined by the type of movement, is forward, sideward, and backward, upward in front, and sideways. The same order of direction is indicated in different planes; i. e., height of ankles, knees, hips, chest, shoulders, head, and reach. The various movement combinations are of similar and dissimilar kinds. They are executed in alternate, intersected, and simultaneous order in the same, opposite, and different directions.

A position usually denotes a standing attitude, as a stride or step position. A movement corresponds to the action expressed in the respective command, as "raise!" or "sink!" An exercise consists of at least two distinct movements repeated rhythmically, as "raising" and "sinking." A movement as well as an exercise is termed simple when involving only one form of action, as when a part, as the head or trunk, is flexed or rotated; or when two like parts of the body, as both arms, are raised and lowered; it is termed complex when involving more than one form of action, as in an extension with rotation of the arms. Simple movements and exercises of parts as a whole precede complex movements and exercises. Positions and movements, as well as changes in positions and movements, are practiced to command only. Rhythmical execution of "exercises," simple, complex, and combined, to signal or other accompaniment, follows only when warranted by good and accurate execution of positions or movements comprising an exercise. The different standing positions, as well as the starting positions of the arms, serve various purposes. The standing positions represent the bases, in a measure determining difficulty of execution and effects of exercises. The proper adaptation of the starting positions of the arms conduces to a concentration of effort.

Springing Exercises

APPARATUS, POSITION, START, ALIGNMENT: Four or more rubber-covered spring-boards, with the highest edges placed in line on the off-side, at a distance of about ten feet from the head or front of a class in open order, numbering four or more files, eight to ten ranks* deep, one arm's-length distance between ranks, and two arm's-length distance or more between files; four or more mats, placed lengthwise at a distance of two or more feet from the spring-boards (off-side). Pupils leave head of files for positions on boards and align in the rear of the class, passing left (or right) of files after execution of exercise upon the command "March," the class moving forward a step or two with each succession.

The jumping may be preceded by a review of the movements, occurring in the following order, in class practice: Arm and leg exercises practiced separately and together; the first arm movement, to the position on tiptoe, made in the direction of the jumping movement; the second arm movement, to the position with knees bent, made in the direction opposite to the jumping movement; the jump, arms carried in the direction of the jumping movement during the flight from board to mat. Practice forward, backward, and left and right.

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* *Ranks* consist of successive numbers — 1, 2, 3, 4 — pupils standing next each other in "front order," counting from right to left. *Files* consist of all like numbers, pupils standing behind each other in "flank order."

I.

Start: Fundamental standing position on the board.

1. Raise arms forward to stand on tiptoe — *one!* Lower arms (position backward) and bend knees — *two!* Jump forward — *three, four.*

At "three" the pupils jump and swing the arms forward, straightening the body during the flight, and alight gently to bent-knee position, quickly resuming the fundamental position at "four." The landing must result in a proper standing position before the following order is announced.

Move boards backward two or three inches with each repetition (last rank) until "limit jump" of majority is reached. (Occasionally command upward, sideward, or side-upward swinging of arms to flight.)

2. Practice backward jumping over first distances.

Arms are swung in the direction of the jump. Ex.: Raise arms backward, on tiptoe— *one!* Arms forward, bend knees—*two!* Jump backward—*three, four.* Arms are vigorously swung backward during the flight and lowered to resume the fundamental standing position.

3. Repeat jumping forward from a walking start, leaving the board with both feet.

(Exercises may be preceded by a double hopping start on the boards—girls.)

4. Repeat with running starts, landing on the board, as above, with both feet to jump.

5. Repeat exercises without boards and mats, marking starting and landing places.

II.

Repeat exercises under I, hands weighted with dumb-bells (one or two pounds).

Swinging the arms vigorously in the direction of the jumping movement is effective in securing better execution.

III.

Repeat exercises under I, executing movements (exercises) during the flight, as raising left, right, or both knees forward; legs (flexed) backward; side or cross striding, turning, with appropriate arm movements. Touch left, right, or both feet, knees raised forward, or legs raised backward (flexed), etc.

(Add exercises to the landing, as rolling over forward to stand—in connection with facings, etc.—for boys.)

IV.

Apparatus: Jumping standards, ropes one to three feet high over center of distance—raised one notch with each repetition.

1. Repeat above exercises.

2. Repeat exercises, moving jumping standards toward the board or mat. Increase distances; raise ropes. (Long high-jumping; high broad-jumping.)

Apparatus: Jumping standards, boards, mats. (Boards placed close to mats; ropes resting over mats. Move standards forward when necessary.)

I.

Jump as above, increasing height one or two notches with each repetition (until limit jump of majority is reached.)

Repeat, executing quarter facings left and right after clearing rope.

II.

1. Repeat height-jumping, side-striding during flight. (Running starts.)

2. Repeat, executing facings (quarter and half facings) during flight.

III.

Repeat, height-jumping, executing facings before clearing rope (clearing sideways, knees raised, or legs extending forward.)

IV.

Height-jumping. (Standing, walking starts, short running starts.) [Always begin a few inches below the height all can jump.]

Repeat height-jumping over two ropes, three to six feet apart.

Repeat height-jumping between two ropes—one placed above the other, about four feet apart.

Repeat, decreasing space between ropes.

1. By raising lower rope, or by lowering upper rope.

2. By lowering uppermost and raising lower ropes.

3. By moving jumping standards closer.

Home Economics

Alice Peloubet Norton

In almost every place where cooking has been introduced it has been something apart by itself, with no relation to the other work of the school. If it is to be made of the most value in the training of the child it must become an integral part of the work. An attempt to bring this about has been made in the Fifth and Sixth Grades, where the cooking is a part of the nature study, and is kept in close relation to the history and geography (see grade outlines). Taught in this way the work becomes a mode of self-expression which adds to the clearness of the images in the child's mind.

In the Sixth Grade the experiment is under way of giving part of the cooking lesson in French, thus aiding the children who are studying this language to become easily familiar with French words and phrases, because used in connection with their activities. The results of the experiment will be recorded in the March COURSE OF STUDY.

Pedagogic School: Each lesson in the pedagogic school is devoted partly to a general discussion of the food materials studied, with experiments to determine their nature, and partly to the actual cookery of the foods.

Some of the experiments which have been used during the last few weeks are here given:

I. Test for sugar.

1. Dip the end of a clean glass stirring rod in some glucose. Dissolve the glucose that adheres in a very little water. Add 5 c. c. of dilute copper sulphate solution and 5 c. c. of strong potassium hydrate solution, or enough to dissolve the precipitate formed. Boil for a moment. Compare with the result obtained by boiling the same amounts of copper sulphate and potassium hydrate solutions without the glucose. The mixture of copper sulphate and potassium hydrate is known as Fehling solution.

II. Change of cane sugar to glucose.

1. Repeat the last experiment, using a little cane sugar instead of the glucose.

2. Take about 5 c. c. of a solution of sugar, add ten drops of hydrochloric acid and boil for fifteen or twenty minutes. Then neutralize the solution with sodium carbonate and test as before.

3. Test 10 c. c. of milk for sugar.

III. Change of starch to dextrin and sugar. Heat carefully in an evaporator about 5 grams of powdered starch, with constant stirring. After heating for about ten minutes, let the dish cool, add water, and boil. Filter the mixture, and to a small portion of the filtrate add twice its bulk of alcohol. To the remainder of the filtrate add 1 c. c. of hydrochloric acid, and boil until a drop of the liquid taken out gives no color with a drop of iodine solution. Neutralize the solution with sodium carbonate, and test for sugar.

IV. Change of starch to sugar by the action of saliva.

To 5 c. c. of thin starch paste, in a test tube, dad an equal amount of saliva. After two or three minutes test a small portion for sugar as in the previous experiments. If no result is obtained, try again at the end of five minutes.

In the cookery a special attempt has been made to show the underlying principles and to group similar recipes together under one head. The principles of cookery are few and simple, and are only repeated in different form in the multiplicity of "dishes" made. In selecting the rules to be used care has been exercised to take those which best illustrate the principle involved. Whenever there is an apparent violation of this principle the reason for it must be carefully explained. In the preparation of both egg and meat dishes, for example, the principle is that of albumen cookery. Soft custard, creamy eggs, stewed meat—all illustrate well the use of the low temperature. Roasting and broiling of meat, and the making of omelet, each requiring a high temperature at the beginning, would seem directly to violate the rules laid down, until it is seen that the mass of material is not raised above the required temperature (80° C.), and that the outside layers are sacrificed for definite reasons.

The work for February will include gelatine dishes, with a review of custards; vegetable soups; combinations of starch and albumen, in cream tapioca, chocolate cream pudding (prepared with corn starch), and macaroni or rice scalloped with cheese. One lesson will be given to the observation of a class in cookery, and the method of teaching it will be discussed.

Some of the recipes used are given below:

Custard

General rule:
1 cup milk.
2 tablespoons sugar.
1 egg.
¼ teaspoon of flavoring.
Speck of salt.

This may be made into soft custard, baked custard, or steamed custard, according to the method of cooking.

Soft Custard: Heat the milk in the double boiler. Beat the egg slightly and add the sugar and salt. Pour the hot milk gradually upon the mixture, return to the double boiler, and cook, with constant stirring, till the custard thickens, and will heap up on the spoon. Strain immediately into a cold dish and flavor.

Precaution: Do not over-cook, or the custard will curdle. Keep the water in the double boiler just below the boiling point. (A vigorous beating with a Dover egg-beater will often restore the smooth texture to a slightly curdled custard.) Do not beat the eggs too light.

Variations: Caramel custard may be made by boiling the sugar with an equal amount of water, without stirring, till a light brown color is reached, and adding this to the hot milk before combining with the egg. For chocolate custard, melt ¼ ounce of chocolate with 1 tablespoon of water and 1 tablespoon of the sugar, and add to the milk before combining it with the egg and the remaining sugar.

Two egg yolks may be substituted for the whole egg. A white custard may be made by using two whites of egg in place of the whole egg. This is usually steamed by filling cups with the mixture and setting them in a pan of hot water on the stove, covering, and cooking till firm, without stirring.

Baked custard may be made by mixing the given ingredients and baking in a moderate oven until the mixture is firm, and a knife-blade thrust into it will come out clean.

Cream of Tomato Soup

1 can tomatoes.
2 teaspoons sugar.
1 teaspoon salt.
¼ cup flour.
2 tablespoons butter.
1 quart milk.

Add the salt and sugar to the tomatoes and cook till soft; mix flour and butter together and stir into the tomato; cook five minutes more, strain and cool. When cold, add the cold milk, heat and serve.

(The cooling of the tomato is for the purpose of preventing the curdling of the soup.)

In giving the lesson on cream soups, several different kinds should be chosen, and the pupils, by comparing the different recipes, should deduce a general rule. It will be seen that in all cases the principle is that of a white sauce, generally with the addition of a vegetable. The amount of flour used will depend on the thickening power of the vegetable, that is, on the amount of starch which it contains. The flour cannot be omitted (except where a starchy vegetable is cooked for hours, as in the case of split-pea soup made in the Aladdin oven) for the vegetable and liquid tend to separate.

Cooking in the Primary Grades

Flora J. Cooke

Milk: In comparing their own winter foods with the chief food of the Eskimos the children will be interested in discovering the sources and uses of the oils and fats used as food.

In this connection they will experiment with milk, each grade attempting to make butter good enough to serve at luncheon to the other grades. They will first set a certain quantity of milk under various conditions of temperature, in cold water and in deep and shallow pans, and measure the amount of cream which rises during twenty-four hours.

They will be allowed to find out for themselves just how to make the cream into butter. The Third and Fourth Grades may use *Stories of Industry*, Volume II (pages 100 to 108, inclusive), as a text-book. The First and Second Grades will have pictures and data provided at school, and will find out all they can at home about making butter.

Each child will then churn, wash, salt, and serve the butter according to his own judgment. He will note and record the results of his experiments, and will discover the difference in the color, taste, and consistency of whole milk, skim-milk, sour milk, buttermilk, and whey. They will also make and serve cottage cheese during the month.

Recipe 1:

Each child will take one-half cup of milk.

If we allow one-quarter cup of lemon juice to one quart of milk, estimate how much lemon juice should be given to each child.

Put the lemon juice in the milk, and allow it to stand until coagulated.

Heat slowly, but do not boil until the whey and curd have separated. Turn all into a colander lined with a square of white cheese-cloth, and drain off the whey.

Add to the curd a little salt and cream, and mix all together into the form of little cakes or balls for the table.

Recipe 2:

Milk that has soured naturally may be placed in a pan over a kettle of hot water until the whey settles to bottom of the pan. The curd may then be treated and served as in Recipe 1.

Number work in this connection, as explained in previous numbers of the COURSE OF STUDY, will consist in the careful measuring and weighing of the materials, in estimation of amounts to be used in the testing of temperatures, and in keeping of the necessary accounts as to the cost of materials for the month, and in the finding of each person's share of the expenses.

Reading: Many books and pictures for reference in this study will be placed in the library where the children may have free access to them. Paragraphs in these books that are especially adapted, or that bear directly upon the child's experience, will be marked by the teacher. The children may use the stories and facts thus gained in entertaining their guests during the luncheon at which their own butter or cheese is served.

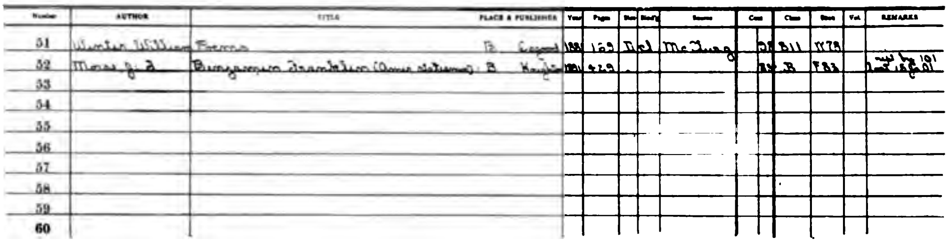
From Mrs. Kellogg's *Science in the Kitchen* selections will be made describing the Oriental method of churning butter in a goat's skin, and the butter of Jerusalem. Parts of *A Dog of Flanders* may be read to advantage. From the encyclopedias, and the various geographies and histories, stories will be compiled by the teachers illustrating the use of cow's butter and oil in Greece and Rome; of butter and oil from olives and coacoanuts, and of animal oils and fat as used by the Eskimos.

References: *Milk as Food*, Farmers' Bulletin, No. 74; Knight, *Food and Its Functions;* Webb, *Butter-Making;* Wing, *Milk and Its Products;* Mrs. Kellogg, *Science in the Kitchen.*

Organization of a Library

Irene Warren Frances Simpson

Accession Book: Every book should be carefully recorded as soon as it has been checked with the bill and collated. A blank book with the proper headings and known as an accession book has been made for this purpose. It may be secured in a morocco-bound volume of five thousand entries, in press-board with one thousand entries, or in single sheets. A sample of the page is here given to show the entries:



Number	AUTHOR	TITLE	PLACE & PUBLISHER	Year	Pages	Size	Bind'g	Source	Cost	Class	Book	Vol.	REMARKS
51	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]		
52	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]	[illegible]	[illegible]		[illegible]
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The accession book contains the life history of every book from the time it enters the library until it leaves it. A list of rules for entering books is given in the front of each book, and may also be found in the New York State Library School *Rules for a Catalogue.*

Each volume is given the number of the line on which it is entered. This number is placed on the lower margin of the first recto after the title-page. The same number is never assigned to two books, even if the first one is lost or sold, or an exact duplicate is obtained. Where there is a large collection of books, the Bates numbering stamp will be found a great convenience in stamping the accession number on the books.

A list of abbreviations is given in the front of the accession book which should be used in entries. Under the heading "Source" the name of the giver, if a gift, or the firm from whom bought, is given. Under "Cost" the actual amount paid in dollars and cents should be given. Under "Remarks" the rebinding, loss, or anything of value in the book's history should be recorded.

Marks of Ownership: Every book belonging to the library should bear the official name of the library. Care should be taken to deface the book as little as possible. A perforating stamp is the safest mark, but an embossing stamp or rubber stamp may be used. Every book should be stamped on the upper right-hand corner of the title-page, and also on the same corner of the main paging of the book. A little of the print should be taken in each time. If there are valuable plates in the volume they should be stamped on the middle of the back with a small, neat rubber stamp.

Labels: Every book should bear a label on the back where the class number can be plainly printed on in Higgins' Black Waterproof ink. A plain white gummed label, oval, or with clipped corners, as in the Dennison No. 16A, is the neatest and most serviceable. A little household ammonia rubbed on where the label is to be pasted will take the glue out of the binding and make the label adhere. A piece of leather cut about the width of the back of an average book and about four inches long, with a hole the size of the label cut three-quarters of an inch from the bottom, will enable the person pasting to keep the labels even. This adds greatly to the appearance of the library.

Discussion of the Programs of Work in the Primary Grades of the Chicago Institute

Flora J. Cooke

Correlation of Work

It was made evident in the discussion of an ideal course of study at the Illinois State Teachers' Association at Springfield, that the programs and grade outlines which appear each month in the COURSE OF STUDY do not clearly represent the work done by the children of the Chicago Institute.

A fixed program is at best a most artificial thing. That in the Chicago Institute grows out of a consideration of the right of the whole school community to the use of the physical and manual training rooms, and that of each child to his share of the teacher's attention. For the sake of a clearer discussion, we take the liberty of presenting the program for the First Grade for the present quarter. The programs of the other three primary grades are similar, with the exception that the teacher of French assists Miss Van Hoesen in the Third and Fourth Grades in giving one literature, one sloyd, one sewing, and one nature study lesson each week. Thus the children learn French incidentally by the same general method that they learned to speak, read, and write English; i. e., through imitation, and prompted by a desire for expression, and by a normal childish curiosity, they soon begin to speak and read French.

It will be understood that the program given below is only a general guide. It can be changed and shifted to suit the special necessities of the children whenever such changes do not interfere with the movement of other classes in the school. For instance, history is down on this program for Monday, Tuesday, and Wednesday, and geography for Thursday and Friday. As the geography is only another phase of this same work, it may be better to emphasize the geographical aspect on Tuesday rather than on Friday, and this will often be done. Again, they may need to observe in history on Monday, read in history on Tuesday, and write on Wednesday; or it may be better to have all three forms of work in one lesson each day. Therefore it is manifestly impossible to put down upon the program exactly what the children will be doing at a given time. Yet all modes of study are as a rule considered as absolutely essential to the study of any subject worth thirty minutes of the children's time.

It was asserted at the State meeting that twenty-two separate activities were demanded of the primary children of the Chicago Institute each week, and that reading, writing, and number received almost no attention according to the grade programs. Such an interpretation of the programs may be natural from a first glance at them, but it is utterly wrong. There is absolutely no isolated activity demanded for the sake of the practical training gained through that activity. The children do not take, as implied, an eight-year graded course in sewing, cooking, sloyd, painting, and modeling for the sake of learning to do these manual things. Such training, per se, surely does not belong to a public school education. These activities are in every case used by the children as means to some

FIRST GRADE PROGRAM, WINTER QUARTER

TEACHERS.	ROOM.	HOUR.	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.
Cooke Atwood Allen Atwood	A. & C. A. of S. 8 5	9:00 to 9:30	Cooking.	Nat. Study.	Rhythm.	Rhythm.	Nat. Study.
Cooke Atwood Atwood Hollister	A. & C. A. of S. 5 Sloyd.	9:30 to 10:00	Cooking.	Art.	O. Read.	Nat. Study.	Clay.
TEN-MINUTE RUN.							
Cooke Atwood	5 5	10:10 to 10:40	Literature.	Number.	Seat Work.	Literature.	Number.
		10:45 11:05	MORNING EXERCISES.				
		11:05 to 11:30	LUNCH.				
Atwood Cooke Goodrich	5 Lib. 5	11:30 to 12:00	Number.	Library.	Music.	Geography.	Geography.
Atwood Crawford Champlin	5 Gym. Sloyd.	12:00 to 12:30	Gen. Ex.	Gymnastics.	Sloyd.	Gymnastics.	Sloyd.
Atwood Goodrich	5 5	12:30 to 1:00	History.	History.	History.	O. Read.	Music.

A. & C. Arts and Crafts.
A. of S Academy of Science.

desired end, and the child merely uses all his mental and physical powers to accomplish that end. He is thus trained naturally and incidentally as the race was trained, and he acquires skill through the rational use of his mind and body in work and play. Thus the doing of many things during a day does not necessarily mean mental dissipation; it may be exactly the opposite thing—strong image growth, concentration, thoroughness in one piece of work.

For instance, suppose during the day that a child plans to make a dictionary.

In manual training he measures and cuts it out.

In number he finds out how many leaves he needs to hold the alphabet, if one sheet makes two leaves; also how wide the cloth binding must be, allowing one-half inch on each side for pasting, etc.

In sewing — seat-work — he makes his leaves and sews them together.

In nature study that day he perhaps adds to his vocabulary five words, printed or written, which he will place in his dictionary for reference and use.

The drawing and painting demanded in this case would probably be only the drawing and painting of the stenciled word "Dictionary" for the front of the book.

Just as much of each activity is exercised as is necessary to make the object fulfill its purpose in the best way. If more space were taken, almost any central subject of study would illustrate this point better, for it would not only offer opportunities for closer correlation of work, but its proper study would illustrate the demand for reading and the various forms of expression.

By comparing this program with the outline of work for the First Grade, it will be noticed that nature study and geography deal with our winter conditions, our food, clothing, and physical environment. This is supplemented in history and geography by the study of the Eskimo, who has the same conditions intensified. In cooking, the fats and oils are studied because at this season they are prominent in the daily food of both peoples. The children have also the added interest of making and serving a good "fatty" food, i. e., butter at luncheon.

Number is demanded for clear picturing at every step. The teacher knows what the children already have as usable knowledge and ability in mathematics, and is aware what the new work may add to that store. This is also true in language and spelling, while the music, literature, and oral reading directly reinforce the other work.

In the library periods the children will be taken to the library, where Miss Warren prepares the books and pictures bearing upon the month's work. Here they will read silently, with the teacher's help.

In the next lesson in the subject thus studied each child will write what he has found out for the benefit of the entire class. This is always one of the most profitable periods of the week, and where the children have not access to a library the same general results can be obtained in the regular class-room from the use of selected supplementary readers and reading slips. The rhythm, ten-minute run, and the physical training provided for by the program mean rest and added power in every line of work—more strength, greater power of attention, and self-control.

In manual training this month the necessity for a towel-rack and dish-pan boards in the lunch-room is a more pressing need to the children every day when they wash their dishes than any demand for work in wood presented by the subjects studied. In doing this work in committees the children will not only apply their knowledge gained last month in the study of wood, and increase their power and skill in manual work, but they will also feel their usefulness to the community in a wholesome way and begin to appreciate and assume class responsibilities.

In summing up this work it is frankly admitted that it is most crude. This article is not written to defend it. The effort is to make the programs understood, and to show why reading, writing, and spelling are not given more definite places on these programs. They are considered as intrinsic parts of all the work, and they come in daily—yes, almost every hour in the day—but they come in to help in definite image-growth, and as the exact action of the child's mind cannot be foretold, so the form of exercise for each period is left to the teacher's discretion, with the understanding that she is held responsible for the thought, expression, and actions of the normal children under her care. If the thought work is really good, the form work cannot be very poor.

The question has been asked during the past month how the subjects of study are chosen and the course of study planned. Under the general ideal of the school each teacher's part is as follows:

A special plan for each month is worked out in detail by the grade teacher. It is based upon the general year's plan for each department in the school, and upon what the teacher knows of her particular children.

It seems fair to say that the subjects selected would stand the following tests:

Each subject must be: Something concerning which the children have an individual as well as a racial experience; something that will arouse a child's self-activity—i. e., which presents or demands vigorous mental or physical action — a demand which a normal child will appreciate and respond to; something which will exert an influence in harmony with the ideal of the school.

The children will read, write, spell, and cipher in every subject; but the vital questions are: Will the particular work chosen arouse interest and sustain it? Is it really worth while in forming the child's habits of life and character?

Explanation of the Changes of Program in the Primary Grades

A change will be observed in the grade outlines for this quarter, the plan for the First and Second Grades being written by Mrs. Atwood, and that of the Third and Fourth by Miss Van Hoesen. The arrangement of placing two grades in one room with an adjacent recitation room seemed best on account of small room-space and the crowded condition of the school. The plan of work, however, has not essentially changed with the change of teachers.

It will be noticed that in many cases the higher grade children will study the subjects selected for the lower grade in the general plan for the year given in the catalogue of the Chicago Institute. That prospectus was not intended as a fixed guide, however, but was merely a hypothesis for work, founded upon previous experience with the interests and development of children of corresponding ages.

This year, as the work is new to all of the children, it seems perfectly feasible for both grades occupying one room to study the same subjects, providing that the work be well chosen and so adapted as to arouse the best effort and activity of each child. Mechanically, this plan is most economical in its demand for pictures, specimens, and reading materials in the class-room.

Better opportunities for correlation in music, literature, oral reading, and all general exercises are also provided when all the pupils of a room are studying the same things, in a general way, in history and science, than when each grade is demanding conditions and appliances for an entirely different line of work. Special provision is made for children who manifest special interest or desire for other forms of work.

Reading Lessons for the Primary Grades

SCIENCE SERIES, NO. 2

(Pictures and Data, I. B. Meyers.)

Flora J. Cooke

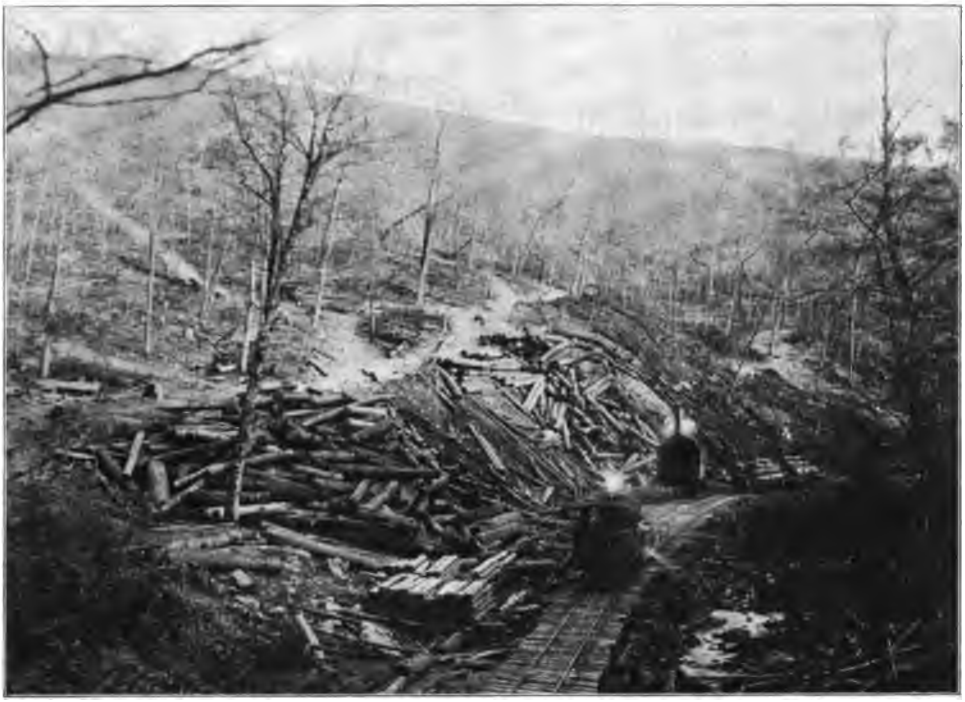
DRAWING LOGS THROUGH THE FOREST

How Lumber Is Made

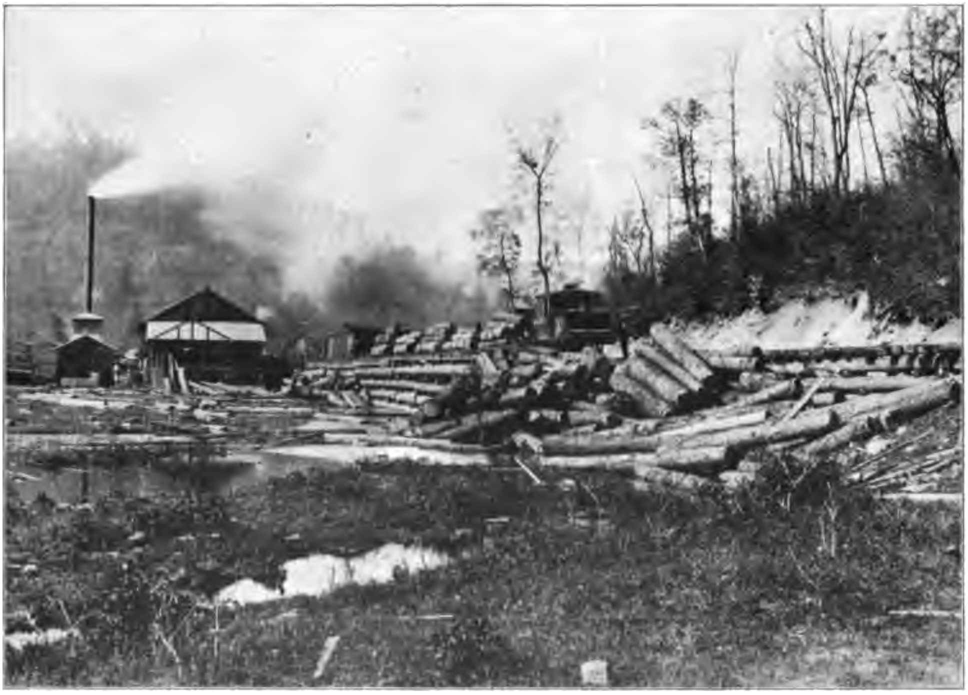
This is a picture of a forest in Pennsylvania. The trees are oaks, maples, pines, and poplars. The men in the picture are called "loggers." They are going to haul many logs to the river which you see through the trees.

First the "master logger" went through this forest. He marked all the trees to be cut down during the season. Then hard work for the loggers began—chopping and sawing, loading and hauling from morning until night.

In every marked tree the men cut notches in one side. Then



GIANT CRANE AT WORK



EXTERIOR OF SAW-MILL

they sawed across the trunks. One after another down came the great trees, crashing and breaking their way to the ground. Afterward all the large branches were sawed off.

See the fine pine tree in the picture. Can you tell how many saw-logs 12 feet long it will make? The horses will haul these saw-logs down to the crane, and they will be placed in great piles like those in the picture.

The big cranes will lift the logs onto the flat-cars, and they will be carried to the great steam-mills.

Whenever it is possible, the large lumber-mills are placed near a river. This is because it is easy and cheap to float the logs a long distance in deep water. When they reach the mill they are dragged from the stream by long chains with sharp hooks on the ends. Next they are taken on an iron carriage to the big saw in the mill.

What has happened in the mill? We see no logs come out at the other end.

They have become boards — pine, oak, and maple — of different

INTERIOR OF MILL

length and thickness. They are now ready to be sent to lumber-yards all over the country.

Do you know how the work in the mill was done? Perhaps the last picture will help you to understand it.

Eskimos

GEOGRAPHY SERIES, NO. I

Greenland is a great island in the North. It is not well named, for almost all of it is covered with very deep ice and snow.

Tribes of Greenland Eskimos live all along the western coast. Yet nowhere on the island can the people live more than twenty miles from the shore. Great mountains and rivers of packed ice and snow cover four-fifths of the land.

These Eskimos have a very short summer, but in June and July the sun does not set at all. It is daylight even at midnight. Summer is the happy time of Greenland. As soon as the ice melts, the ground is covered with a carpet of moss and flowers.

Mrs. Peary spent a year in this cold country. She tells what the children do all the long, dark, cold winter when the sun does not shine at all. She tells also about the wonderful northern lights, more beautiful than our rainbows; about the snow igloos and the kayahs; about the poor Eskimo mothers and girls who must chew all the skins before they can be made into clothes; about the patient Eskimo dogs and their habits; and about the many dangerous seal, bear, and deer hunts. It makes a fine story. Some day you may read it, and many other stories of Greenland.

This is what Mrs. Peary tells about one summer day soon after she reached Greenland. That day she wore long knit stockings and a red blanket dress which reached to her knees. Over this she wore a warm eider-down skirt and long moccasins. But this dress was not warm enough, and she soon changed it for one of fur.

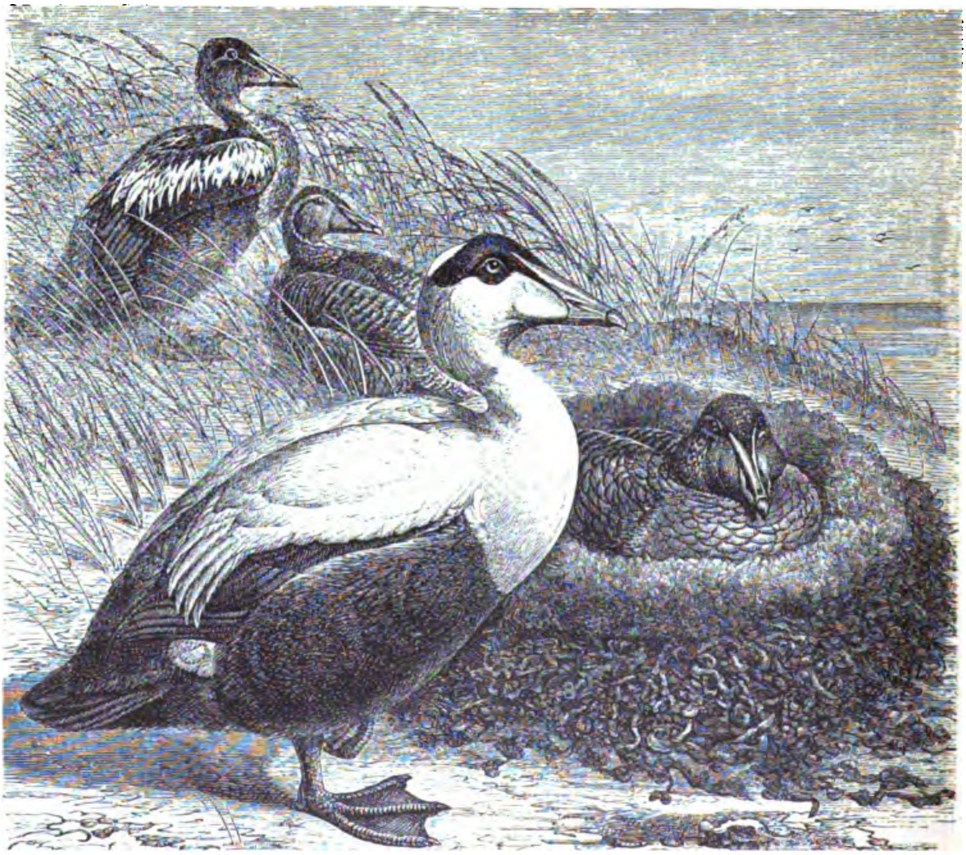
She says of this June day:

"Never had I seen so many different wild flowers in bloom at once. I could not put my foot down without crushing anemones, yellow poppies, or mountain pinks. Never had I stepped on moss so soft and beautiful. It was of all shades of green and red. Some beds of it were covered so thickly with tiny pink blossoms that you could not put the head of a pin between them. Sometimes our path was across great snow-drifts. Sometimes we sunk ankle-deep in flowers and moss.

"Mountain streams came tumbling down in every little gully. The water was always so clear and sparkling that we longed to stop and drink.

"Far below us was Disco Bay, blue as sapphire, dotted with icebergs of all sizes and shapes. Shining in the sun they looked like a fleet of beautiful sailboats. Back of us were the black cliffs and the glittering snow as far as we could see."

Mrs. Peary's Story of the Eider-ducks



"On the morning of July 2, 1891, we arrived at Duck Island. Here we were to land to get eggs and ducks for our winter use.

"The ducks flew in thick flocks all about us. On every side were nests as large as hens' nests. They were made of sticks and moss, and lined with eider-down. Each one contained from three to six eggs. The nests were not hidden, but out on the rocks in full sight.

"Alas, we came too late! The ducks were breeding, and out of the 960 eggs gathered, only 150 were good.

"Yet it was a most successful day. I spent my time in gathering eider-down, and collected forty-three pounds in five hours, and the men of the party carried away ninety-six ducks for winter food."

In connection with this study the children may read selected paragraphs directly from Mrs. Peary's book, and *Seven Little Sisters.*

How St. Valentine's Day Came to Be

LITERATURE SERIES, No. 6

A long, long time ago there lived in France a priest named Valentine. Every one loved Valentine, but his best friends were the children of the village. They came to him with all their joys and sorrows. They understood that this friend was never too tired or too busy to listen to them and comfort them. Many children who could not come to him sent him messages by their friends. These he was always sure to answer.

After a while Valentine grew so old and so many children came to him that he was no longer able to see them all. But he still wrote hymns and verses for them, and no little friend ever left his house without a verse from Valentine. The sick and lonely children of the village were not forgotten even in his old age. His rhymes and verses were always unsigned, but every child could guess who wrote them.

After Valentine died, the people said that he was a saint who had visited the earth. It became a custom for children to send tokens of love to each other on his birthday, February 14th. They too, sent them unsigned, and to this day the custom is observed.

The Kindergarten

Anne E. Allen

A Story of St. Valentine's Day

There is an old legend that runs in this wise:

A long, long time ago there lived in France a priest who was a friend and confidant of all children. They came to him with all their troubles, sure of his sympathy and interest, no matter how small their troubles seemed to be. Their prayers were told him, and they learned from him the form of their childish petitions. The fame of his gentleness and kindly interest spread far and near, and the children came to him in such numbers that he had no time to settle all their little difficulties and disputes.

Seeing this, and feeling sorry that any child should go away from him uncomforted, he asked them to write out all their little petitions and send them to him unsigned, and said that he would burn them and the smoke would carry the little message to its destination.

Sometimes these notes were messages of love and gratitude to their kind friend. After a while the good man died, and it became a custom for the little children to send tokens of love to each other on his birthday, February 14th.

They sent them unsigned, and to this day the same custom is observed.

The Best Valentine

"But where will any valentines come from, way out here in the country? The postman doesn't come, and then there are no children near enough to send me any. Oh, dear! I wish we were back where we used to live!" The tears were in little Alice's eyes ready to fall as she stood by the window of her new country home.

Her father and mother had just moved from their town house out into the country, where they expected to live for a while. There were no houses near enough to see from the windows of this home, whereas in their town home they were to be seen from every window. And as Alice remembered her last St. Valentine's Day, when the door-bell kept her busy running to get the beautiful little messages left for her on the doorstep by loving friends, she grew sad and lonesome.

She was feeling very unhappy when her mother found her with her face pressed against the window-pane and saw the hot tears running down her cheeks.

"What can be the matter with my little girl," she said, as she folded Alice in her warm, loving arms. "Let me see if I cannot chase away some of these clouds. Look."

On the table near was a package, which Alice was told to open. The lonesomeness was soon forgotten, for in the package was a box filled with many beautiful papers, pictures, little pans of gilt and silver paints, a pair of scissors, some beautiful ribbon, and everything needed to make many valentines, enough for all the people Alice knew and many more, and envelopes, besides, to put them in. Together they set to work to make valentines, and each day before the day came to send them they worked making all sorts of shapes, sizes, and colors.

Alice was sure she had never seen such beautiful pictures as she found in that box. There were tiny babies just learning to walk, and little white sheep and lambs; but the very prettiest ones of all, she thought, were the little white doves with letters in their bills.

When the last ones were finished, Alice began to wonder how she was to send them to so many people. When she asked her dear mother, she answered: "Ask father; perhaps he can help you."

Alice ran to him and asked him if he could help her.

"If you will get your warm coat, cap, and mittens on, and mother is willing," he said, "you shall go with me to the postoffice this morning to post them."

It did not take Alice long to get ready, and as far as she could see her mother from the carriage window she waved her hand back to her.

The postmaster lifted her up to the little hole just under the office window and let her drop all the valentines into the box herself.

She was truly a happy little girl, and went to bed that night feeling as if she had already had the happiest valentine time in all her life. While she slept, however, there was much hurrying to and fro through the house getting ready for little Alice the valentine she had wished for most all her life—but she heard nothing.

The next morning the sun was shining in on her bed before Alice was awake, and when it finally did awaken her the house seemed so still she wondered what could be the matter. She hurried around and dressed herself as best she could without help, then stole quietly downstairs, thinking she would surprise her father and mother. When she pushed open the dining-room door and peeped in she held her breath, then ran quickly to her father, who sat by the fire, and jumping up in his lap, cried:

"Father! does it belong to us?"

"Yes, Alice; how do you like him?" answered her father, as he picked up a little white bundle from the nurse's lap and showed Alice the tiny red face within. "He is your valentine."

Here was the very little brother she had wanted for so long!

Tears of joy were in her eyes now, and when the baby boy was laid in her lap she said:

"This is the happiest Valentine Day I have ever had."

ANNE ELIZABETH ALLEN.

Valentines

No. 1. Two pieces of water-color paper 4x5 inches, cut into pansy shape and tied together. The lower one has a picture in the center, and is touched around the edges with gold paint. The upper one is painted as a pansy, and the petals are divided by gilt lines.

No. 2. Water-color paper 8x4 inches, cut into heart shape, so that one heart divides down the center to fold over the other one, on which is pasted a picture. Both hearts are gilded round the edges.

No. 3. Water-color paper 7x4 inches, folded as a screen, with a fruit picture on each side, and the folds and edges (with the exception of the lower one) gilded.

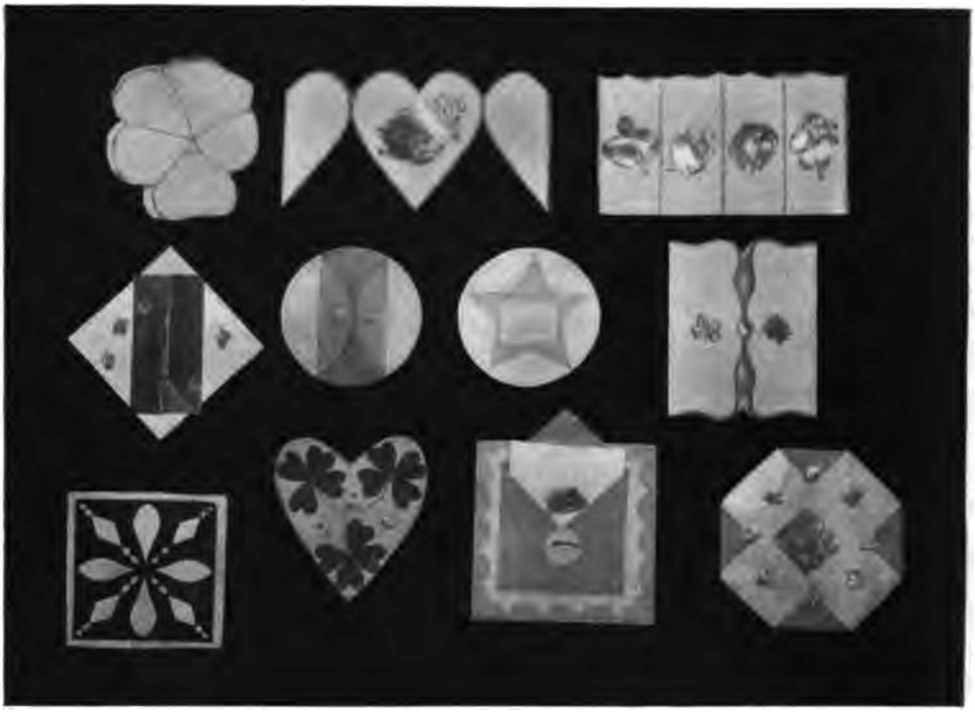
No. 4. Square of white bristol-board 4x4; red and green 4-inch squares of paper with two edges folded to center over a picture. The corners of the folds are turned back and fastened by tiny flowers.

No. 5. Four-inch circle of heavy paper or light bristol-board covered with circle of blue paper. Mounted on this are circles of orange and yellow paper, the opposite sides folded together to the center over a picture.

No. 6. Light gray 4-inch circle pasted on another circle of heavy paper or light bristol-board. On this is mounted a five-pointed star of blue paper with a calendar pasted in the center.

No. 7. Water-color paper 8x5, scalloped and folded as shown. The folds are gilded round the edge and fold over a square of pink paper cut in design and mounted flat on the white paper.

No. 8. A 4-inch square of red paper folded



SUGGESTIONS FOR VALENTINES

on itself three times, cut in design while folded, and mounted on white bristol-board 4¼x4¼.

No. 9. Bristol-board 4x5 inches, cut into heart shape, with three large flowers and three small ones pasted on it. The petals of the larger ones are made of hearts, and the stems are done with gilt paint (white bristol-board and red hearts).

No. 10. Square of gray bristol-board 5x5, with purple half-circles around edges, and mounted on it a purple square folded into shape of envelope, with picture on a card inside.

No. 11. Five-inch squares of pink, blue, and gray paper, folded so that the corners of the blue and gray papers folded together alternate with the pink. MARY HOWELL.

First and Second Grades

Harriet T. B. Atwood

History: Study of the Eskimo. The study of our February landscape will be the starting-point for the history of this month. The children realize that winter has some influence upon their own manner of living; i. e., kind of clothing worn, heating of houses, kinds of food, games, and sports, etc. The influence of environment can, however, be felt by the children much more keenly at this time in the study of a primitive people, who actually live in winter conditions during the far greater portion of the year. A great advantage is offered for the study of the Eskimo in the excellent collection exhibited at the Field Columbian Museum. The work will be taken up as follows:

I. Constructive study of Arctic landscape.

Arctic scenes will be drawn by the children upon the blackboard. The images which the children have of an Arctic scene will of course at first be largely based upon their images of our winter landscape, and the pictures which the children draw will thus contain many inaccuracies. By degrees, through the study of many pictures, descriptions given by the teacher, and simple descriptions which the children can read for themselves, many of these inaccuracies will be eliminated. Two large backgrounds will then be drawn upon the blackboard by the children, one showing winter conditions and the other summer conditions in the Arctic regions. The plants, birds, animals, etc., will be pictured by means of paper-cutting, painting, and drawing, and these will be added to the landscape.

II. Study of people who might be living in in such conditions.

1. What kind of houses would you expect to see in winter? In summer? What clothes would the people have? What food could they find? What kinds of tools and weapons could they make? How could they travel? What would they do in winter? In summer? What would be the games and sports of the children?

III. Trip to Field Columbian Museum to see how the people really did live.

1. What changes have come about among those Eskimo who have come in contact with peoples from the southern countries? What things have we which would help the Eskimo to live more happily in their cold country? What things have the Eskimo which are of value to us? What is the relative value of fur, wood, iron, etc.? Reasons.

Literature: A. E. Allen, *Story of St. Valentine; The North Story of How the Robin Got his Red Breast; The Secret of Fire*, Cooke's *Nature Myths; The White Seal*, Rudyard Kipling; *Mudjekeewis and Mishe-Mokwa*, and *Story of Kabibonokka*, Longfellow's *Hiawatha; Northern Legend of Jack and Jill.*

Speech, Oral Reading, and Dramatic Art: I. Phonic games and training in hearing and reproducing sounds, paying special attention to the opening of the mouth and sending out of tone. 1. Dramatization of portions of the *Story of Kabibonokka.* 2. The children are studying and expressing through drawing the real life of Eskimo men, women, and children as they are engaged in their various occupations; and the most natural thing, and the most helpful to the drawing, will be for them to act out in their own bodies these scenes; as, for example: The Eskimo riding on his sled, driving his dogs, and handling his long whip; the hurling of the spear and harpoon from a boat; and the children's games, such as sliding down hill and playing spearing.

II. Poems: *Far Away in the Northland*, Alice Cary, and *Valentine's Day*, will be studied and recited.

Geography: Study of our winter landscape. Study of the Arctic landscape in summer and in winter by means of many pictures and stereopticon views. Experiments to show manner in which ice cakes of various shapes float in water, packing of snow to form ice. Observation of ice packs along shore of Lake Michigan, and drifting of snow by wind. Comparison of snow after fresh snow-fall with the granular snow which has lain on the ground for some time.

Art: Decoration of valentines; painting of February landscape from windows of Academy of Science building; illustration of Northern landscape on gray paper by means of chalk; drawing of implements used by the Eskimo; drawing of Eskimo men, women, and children engaged in their various occupations, games, and sports; modeling of animals found in the far North, as the reindeer, polar bear, Eskimo dog, seal, walrus, etc.

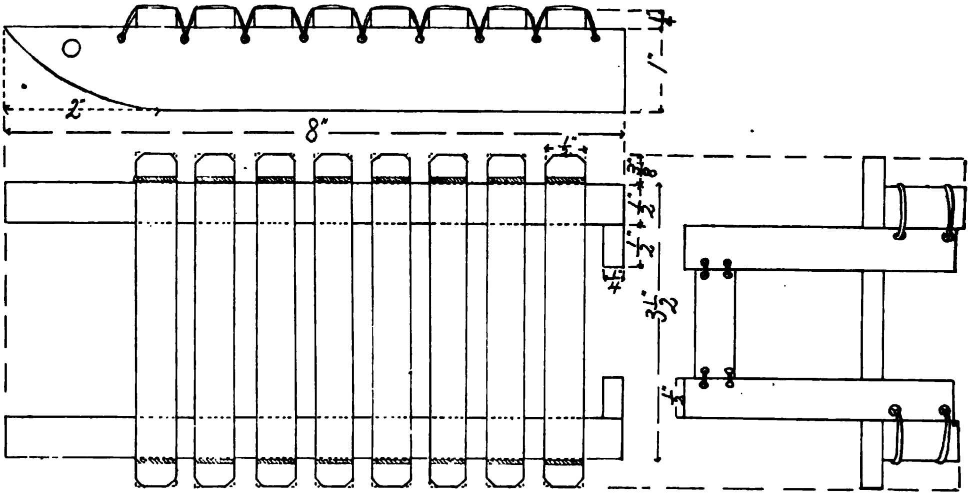
Industrial Art: Dressing of Eskimo doll in skins; making of harness for dogs.

Nature Study: I. Study of foods. 1. List of foods eaten every day. Record of food each child likes best. 2. Sources of food, whether plant or animal. 3. Uses of food. 4. Constituents of foods. Test for starch with iodine. Need of mastication of starchy foods. Test for albumen by heating. Test for carbon by burning. Test for fat. 5. Making of bill of fare for each child in winter; in summer. 6. Making of bill of fare for Eskimo child.

II. Study of birds which are winter residents of Lincoln Park. Visit to Academy of Science to study stuffed specimens.

III. Study of winter condition of trees and shrubs. Experiment to prove presence in the frozen ground of seeds capable of germination, by bringing some of the earth indoors and keeping it warm and moist.

Music: (MISS GOODRICH.) The work of these grades advances in the general direction already indicated. The growth in expressiveness is due chiefly to the individual singing which has been found to be the economical means of securing good



ESKIMO DOG SLEDGE

Made of wood. Slats and back lashed to runners by thongs of skins.

class-singing. The mechanical telling over a tune with others in the accustomed way must be avoided. After a child has expressed his idea of the song clearly—the pictures he sees in it, and the feelings it gives him—his tone and delivery have life, and these are preserved with some care, though he gives up something of his freedom when he sings the song accurately with others.

The effort to make guests or new pupils understand and like a song has been the sole means by which greater clearness of enunciation has been reached. Vividness of declamation—that is, clearly enunciated, life-like speech in singing—comes chiefly under the stimulus of this kind of motive.

Songs: *The Happy Eskimo*, *The Little Trolls*, Modern Music Series, Primer; *Flag Song*, February COURSE OF STUDY; *Flag Song*, *Sleepy Head*, Modern Music Series, First Book; *My Mother's Eyes*, *Sleep, Dolly, Sleep*, Reinecke, Fifty Songs for Children; *Sleeping Beauty*, Brahms' Nursery Rhymes (Augener Edition); *Valentine Song*.

Reading: Simple printed descriptions of animals found in the Arctic regions. Reading lessons on the Eskimo, and on foods, from Cook County Normal School reading slips. Text of songs written upon the blackboard. Reading lesson on the Eskimo in February COURSE OF STUDY.

Additional reading lessons for Second Grade: *The Snowflake's Story*, Bass Nature Reader; *The Seal*, Harper's Second Reader; *Story of Agoonack*, Jane Andrews; Selections from *The Moose, the Elk, and the Deer*, St. Nicholas, vol. 22, part 2; *A Wonderful Monster*, St. Nicholas, vol. 21, part 2; *Jack Frost*, Cyr's First Reader.

Writing, Spelling, and English: Placing of names of foods, of Arctic animals, of articles used by Eskimo, and all new words learned in dictionaries. Placing of recipes in cook-books. Writing of dimensions on all working drawings. Writing of results of experiments upon the blackboard.

Correlated Number: Use of circle maker. Planning of page for February calendar, to be used as a valentine. Reckoning of days in week and weeks in month necessary in planning calendar. Making of working drawing for envelopes to hold valentines.

School Economics: Study of milk, butter, fats. (See Miss Cooke's outline for February.)

Manual Training: Finishing of mineral boxes and making of Eskimo sledge. Making of dish-towel rack for the lunch-room.

Physical Training: Apparatus: Study of hurdling. Starting with one bar, and using but one until form of movement is well learned. In February the children begin the use of two hurdles. The floor must be marked to get right distance for steps between hurdles.

Free Gymnastics: Form and leg movements with music.

Games: Catch ball, bean bags in a circle, circle ball.

References: Mrs. Peary's *Journal;* Rice, *Outline of History and Literature;* Schwatka, *Children of the Cold;* Kipling, *Jungle Book;* Heilprin, *Distribution of Animals;* Nansen, *The First Crossing of Greenland* and *Farthest North;* Wright, *Greenland's Ice Fields and Life in the North Atlantic; The Search for Franklin;* Baldwin, *The Search for the North Pole;* Martin, *Human Body;* Jackman, *Nature Study and Related Subjects*, pp. 80-85; Richards, *Chemistry of Cooking;* Cooke, *Nature Myths;* Longfellow, *Hiawatha;* Jane Andrews, *Seven Little Sisters* and *Each and All.*

Third and Fourth Grades

Gertrude Van Hoesen

Geography for the Third Grade: In the work planned for January it is only possible to make excursions to the different places that will represent the food supply of the city. They will only be able to get some idea of the immense amount of food shipped into the city.

The work for February will consist of a study of the sources of all of these supplies by means of stereopticon views, pictures, and descriptions.

I. Fruit.

1. The orange and lemon groves of Florida and California. How are these fruits prepared for shipping?

2. Where are the grape-fruit and tangerine found?

3. The banana groves; pine-apple fields; date and cocoanut palms; olive and fig orchards.

II. Vegetables and grains.

1. The large market gardens near Chicago.

2. Those of California owned by the Chinese.

3. The large farms of Illinois.

III. Animals.

1. The large stock farms of the West, with its typical life.

2. The life of the hunter who captures and ships the game.

IV. Means of transporting these things into the city.

The children will be given some idea of Chicago as a railroad center by drawing into a large picture the railroads which bring the food from the different sources.

Geography for the Fourth Grade: During January the children are studying Lake Michigan in its relation to the life of a great city. In February, by means of the stereopticon, pictures, and written and oral descriptions, they will be taken out of their environment to the life of the ocean, and be led to see that the only difference lies in the fact that the water is salt, thereby producing a different animal life and influencing the industries to some extent.

By means of the stereopticon, views of many coasts will be shown, and the following points considered:

I. The life of the people.

1. Their homes.

2. Their occupations.

II. What has been done to protect the lives and industries of these people?

1. Lighthouses.

2. Fog-horns.

3. Buoys.

4. Life-saving stations.

Stories of the bravery exhibited by these men during the storms along the coast. One of these stories will be adapted from a scene in *A Singular Life*.

III. Animal life will be especially studied.

1. Fish.

2. Oysters.

3. Lobsters, etc.

4. Sponges.

5. Polyps. (a) Coral. (b) Sea-anemone.

6. Star-fish, sea-urchins, sea-cucumbers.

IV. What is the difference between the water of Lake Michigan and that of the ocean? Cause?

Science: Continue work on food, temperature, and prehension of food. Special subject, air; point, ventilation.

I. Prove the presence of air.

1. Experiment: Invert a glass over a pan of water, and press down on the surface of the water. Why does not the water go up into the glass?

II. Prove necessity to fire.

III. Prove necessity to plants.

IV. Prove necessity to us.

1. Take the chest measurement of each child, both in natural and expanded conditions. To what does one inch in expansion correspond in terms of capacity or volume?

a. Experiments: Take a bottle of known capacity, place a U-shaped glass tube, one end reaching to the bottom of the bottle, the other fitted into a rubber tube, which may be placed in the mouth. Fill the bottle fitted as described with water, and invert it in a pan of water. Exhale. What happens? What amount of air was exhaled? In order to answer, measure the amount of water left—in pints, quarts, etc. In how many exhalations can a bottle be emptied?

b. Invert the bottle filled with air in a pan of water. Inhale. What happens? What is the amount of air inhaled? In how many inhalations can you fill the bottle?

c. After giving each child an opportunity to become familiar with the apparatus, make a record of each child's lung capacity. What is the lung capacity of the class? How much does the class exhale in one exhalation? Do we inhale and exhale the same thing?

d. Have one of the children blow into a jar several times. Then plunge a lighted taper into it. Note result.

e. Have a child exhale into a test tube containing lime-water. Note result. If a fire will not burn in what we exhale, what will be the effect if we inhale it? How can we be sure that we do not inhale it?

f. Place lime-water in an open vessel in various parts of the room, near the ceiling and on the floor. In what way can we be sure of getting pure air? Open the window slightly at the top and bottom. Test the direction of draught with lighted candle or smoke. What would result if the windows were left open in this way?

Have the children work out the best way to ventilate the room.

Number: I. Number involved in the study of air.

1. Amount of air inhaled by each person.
2. Total amount inhaled by the class. Average amount.
3. Total amount exhaled by class. Average amount.

II. Physical measurements of children.

1. Average height of the class. Of the boys. Of the girls. Of different ages.
2. Average weight of same.
3. Average age of each class.
4. Average chest measurement.

What has been the individual growth since October?

History: The Athenian boy. (Taken from Miss Rice's Outline.)

Story of Socrates, setting forth the poor house in which he was born, together with its surroundings—the potter's shop across the street; the sandal-maker's shop near it; the ceremonies at Socrates' birth; how the boy amused himself at home; the work at school and at the gymnasium. The appearance of the street through which he walked to school; his walk to Piræus one day to see the ships; his trials in learning to be a sculptor; what he saw when he was one day sent to the market-place; how he saw the building of the Parthenon.

The real success of the work depends upon giving the children the Greek feeling, in making them feel at home in Athens. In order to do this, it will be necessary to make them see the city and the country around it—mountains, rivers, seas, trees, flowers, animals, buildings, and people. They must do as many as they can of the things the Greeks did; e. g., play Greek games, mold Greek vases in clay, write on wax tablets made by covering thin boards with paraffine.

An excursion to the Greek room in the Art Institute will prove of great value. Pictures, models, or actual objects must be used at all times—pictures of Greek houses, the fac-simile of Greek vases, and the Greek dress, for which the children will make designs and borders.

Music: (MISS GOODRICH.) These two grades contain two different elements—one musical and independent, the other unmusical and self-conscious, with a tendency to scorn songs simple and childlike enough to connect with the work they are doing in other departments. The songs will be chosen for these older and less musical children, and for the present the emotional side will be left subordinate and the technical emphasized. As many as possible of those used in morning exercises will be learned, in which the Third Grade will grasp the tune easily, and the Fourth will understand and remember the words best. The two grades sing for each other at every lesson; the less self-conscious children are called upon for individual work, and it is hoped that the usefulness and naturalness of singing alone will presently be established generally.

Songs: *Flag Song*, February COURSE OF STUDY; *Hail, Columbia*, Modern Music Series, Second and Third Books; *Le Rat de Ville, et le Rat des Champs*, February COURSE OF STUDY; *Fatherland's Psalm*, Grieg (Augener & Co., Seven Children's Songs); *In February*, Songs of Life and Nature. Other songs more generally suitable for these grades: *Sleepy Head, The Snow Man*, Modern Music Series, First Book; *Hurrah for the Flag, Song of Labor, The Snow Man*, Modern Music Series, Second Book. The patriotic and other songs which require power and breadth are of course sung, so to speak, in miniature.

School Economics: (See Miss Cooke's Outline.)

Textile Fabrics: The children will design and make aprons to be worn when cooking and weave holders to be used in moving hot vessels. They will decorate the Greek dresses with embroidered designs.

Art: Modeling in clay Greek vases, decorated by Greek design, or scenes in Greek life, as the boys playing with the discus; the sea animals. Illustration in painting of scenes from Greek life and of the myths that the children of that nation were told; the pictures of the life on the coast; the surrounding landscape and the great food areas.

French: It is entirely correlated with the nature study, manual training, textile fabrics, and literature. The French literature for the month will consist of French fairy stories.

Literature: *Greek Stories*, Baldwin. The stories that the Greek children were told, as *Arachne* and *Prometheus*, especially those which emphasized the qualities which they as a people wished to impress upon the children.

Dramatic Art: In connection with the life of Socrates as a type of the Athenian boy, the dominant characteristics of the gods will be considered, and their influence upon the life of the people, as, for example, the influence of Minerva on weaving and spinning as illustrated by the story of *Arachne*, told by Baldwin in *Old Greek Stories*. This story will be dramatized. The story will be read to the children. They will suggest the action and let the action suggest the words until a little drama is the result.

Among other Greek stories used, *Prometheus* illustrates the characteristics of Jupiter. The children will read them whenever it is possible.

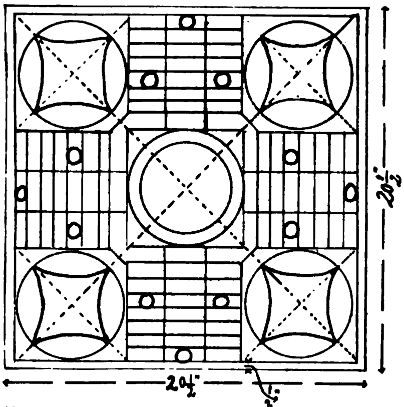
Manual Training: In January the children chose to make a set of games for the play-room. They selected the games they wished to make, which were parchesi, crokinole, conette, ring toss, parlor quoits, board and hooks, and checkers. They then decided on the number of each, and the room was divided into committees in order to make and present plans from which to work, each committee having charge of one game. Each child planned the game, and submitted it to the committee, and then the plan to be followed was selected. The plans in this COURSE OF STUDY were traced directly from those made by the children. The scales below the drawings indicate the scale used by the children, not the one used in this book.

In most cases the plan was made full size on the board, and then reduced to the ½-inch, or ¼-inch, or ⅛-inch to an inch in order to put it on the paper that the children use for all of their work. Rulers, pencils, and dividers were the only tools used in making the plans.

The work was divided among twenty children, all working at one time, and was therefore perfectly individual, and at no time dictated.

The amount of number involved for the individual child may be illustrated by means of the game parchesi.

Parchesi.



Scale ¼" = 1"

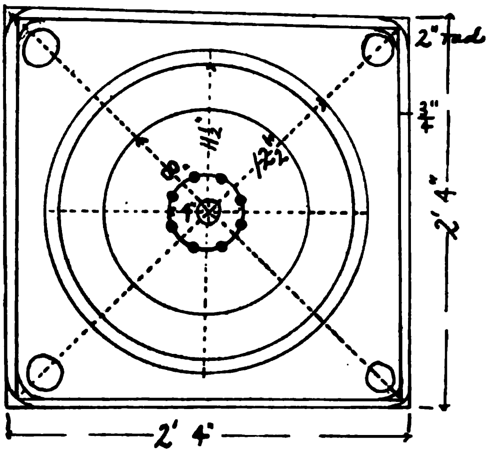
Norman Ruble
Joseph Loreach

The full-sized plan required the most careful measurement and judgment. It was not drawn on the blackboard, but on a large sheet of manila paper. The foundation of the game is a piece of wood 20½ inches square, with a half-inch bevel. In order to reduce it to the scale indicated, the following were some of the problems:

¼ of 20½ inches = 5⅛ inches.
¼ of ½ inch = ⅛ inch.
¼ of 5¼ inches = 1$\frac{5}{16}$ inches.
¼ of ¾ inch = $\frac{3}{16}$ inch.

and others of the same kind.

Crokinole Board.



Scale ⅛" = 1"

Filmer Coy
Emmons Blaine

The crokinole board consists of ten pieces, the foundation of which is a large piece of wood 2 feet 4 inches square. The large circle indicates a large circular piece of dark wood, which is fastened on the square. The other circles merely indicate circles on this dark circular piece of wood. The corner circles represent pockets of coarse net.

The number necessary in drawing the plan to the scale indicated was:

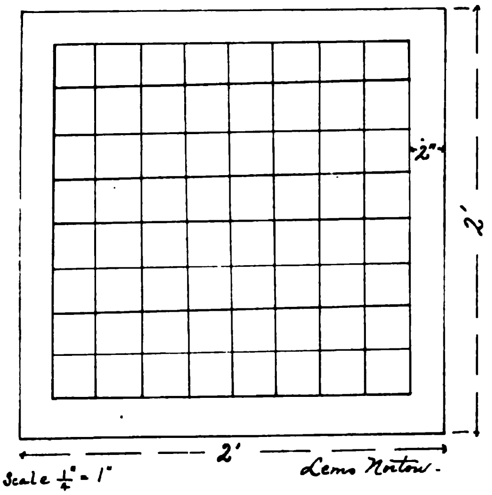
⅛ of 2 feet 4 inches = 3½ inches.
⅛ of 12½ inches = 1$\frac{9}{16}$ inches.
⅛ of 11½ inch 1$\frac{}{16}$ inches.
⅛ of 4 inches = ½ inch.
⅛ of ¾ inch = $\frac{3}{32}$ inch.
⅛ of 2 inches = ¼ inch.

The problem in planning the checker-board was different from the two preceding ones, as there was no checker-board for a model. The plan as it now stands represents a board two feet square. The children at work after several trials decided upon a two-inch border. The problem then was, how to put eight rows of eight squares in the remaining space which was twenty inches square.

Also:

¼ of 2 feet = 6 inches.
¼ of 2½ inches = ⅝ inch.

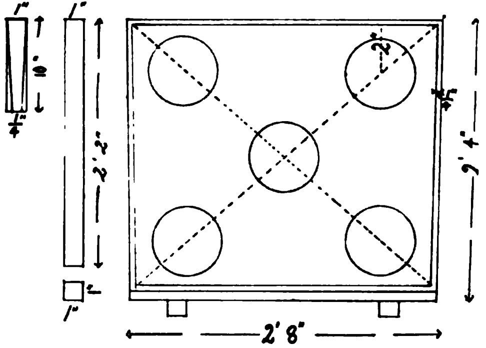
Checker-board.



Lem Norton.

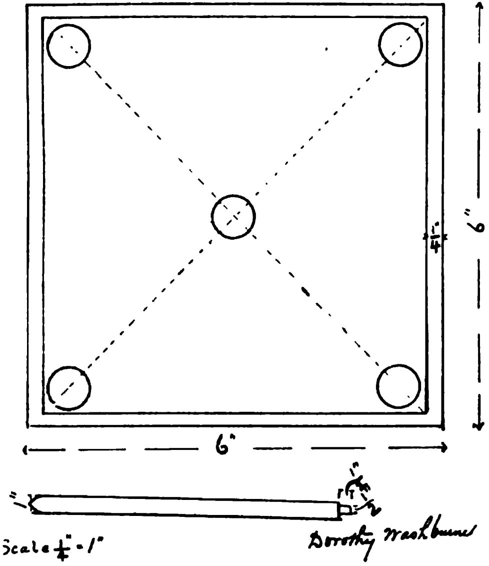
The game of parlor quoits or bean-bag is a familiar one, but the plan as presented is original. It consists of five pieces, a large rectangular board with a quarter-inch bevel, two strips which brace it at the back, and two legs which are fastened to one of the braces by means of hinges. The holes through which the bean-bags are thrown have different values, which were omitted on the drawing—twenty-five for the central hole; five, ten, fifteen, and twenty for the remaining holes. The number involved will be apparent if the dimensions and scale are noted.

Parlor Quoits



The game of ring toss consists of a standard two feet square with a half-inch bevel, five upright posts, the center one being one and a half feet tall, and the others one foot, and five rings four inches in their inner diameter. The rings will be made under the direction of the teacher of textile fabrics.

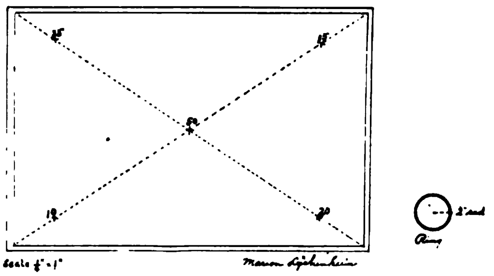
Ring Toss.



Dorothy Washburn

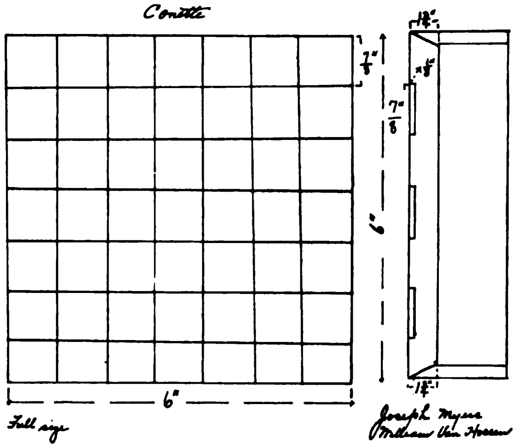
The principle of this game and that of ring toss is the same with one exception. At the points indicated large hooks are placed. The board is then placed in a vertical position. In ring toss the po-

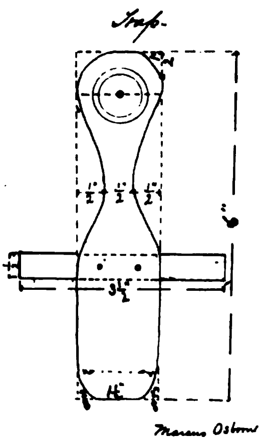
Board & Hooks.

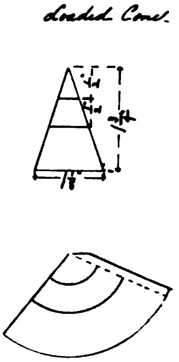


sition is horizontal; but in both cases it consists of throwing the five rings so dexterously as to place one on each hook or pole.

Conette consists in a box six inches square and one and three-fourths inches high, two traps, and a cylinder of loaded cones. The plan presents a view of the box as seen from above and one side of the box. Across the top of the box cords are strung at right angles with each other, so as to make a net. The most ingenious piece of work done in all the work with the games was probably the planning of the trap by a boy who is very averse to number but deeply interested in all constructive work. The trap was given to him with directions to show how to make one. The plan as shown here is what he produced at the end of one-half hour. The game of conette is one which was gotten out by the Milton Bradley Company.







Fifth Grade

Clara Isabel Mitchell

The kinds of hand-work planned for the month are cooking, weaving, clay-modeling, and wood-sloyd.

Cooking: In January the class began the cooking and study of cereals. The first lesson was the comparison of familiar cereals—wheat, corn, oats, barley, and rye; the popping of corn, weighing before and after popping; and making of popcorn balls. The second began with an examination of the corn food—corn meal, fine and coarse, hominy and corn-starch, followed by the making of corn-starch mold. The third was washing the starch out of wheat, boiling it and using. The fourth was the roasting of wheat and oats for cereal coffee, making the coffee; also of postum cereal.

Continuing the study of cereals in February, the children cook oats, corn, and wheat, comparing them with potato as another starch food. The first lesson will be the cooking of oatmeal and wheat germ by the following rule (Mrs. Alice P. Norton's):

(All measurements are made level.)

WHEAT GERM WITH DATES.

2 tablespoons of wheat germ.
½ cup boiling water.
⅛ teaspoon of salt.
4 dates, or
4 stewed prunes.

Sprinkle the wheat germ into rapidly boiling salted water, stirring rapidly. Boil for two minutes, then place the saucepan in another of boiling water, and continue the cooking for twenty minutes. Meanwhile remove the stones from the dates and cut them into small pieces. Stir them into the wheat germ just before serving. Cooked prunes may be used in place of the dates.

OATMEAL WITH FRUIT.

4 tablespoons rolled oats (steam cooked).

½ cup of water.

⅛ teaspoon of salt.

1 apple cooked in a syrup made from 1 tablespoon of sugar and ¼ cup of water.

Cook the oatmeal in water as directed for wheat germ, but extend the time to thirty minutes. Core, pare, and cook the apple. When it is soft, remove it from the syrup, place in a saucer, fill the cavity with the cooked oatmeal, and pile the rest of the oatmeal around it.

The second lesson will be an excursion to a flour-mill; the third, cooking of potato.

POTATO SOUP.

1 small potato.
1 cup milk.
1 small slice of onion. (This may be omitted.)
½ tablespoon butter.
½ tablespoon of flour.
¼ teaspoon of salt.
Speck of pepper.
¼ teaspoon chopped parsley.

Boil the potato till soft and mash thoroughly, using a potato ricer, if possible. Scald the milk with the onion, and remove onion. Make a thin white sauce as follows: Melt the butter, add the flour, salt, and pepper, mixed together; then the milk slowly, stirring constantly. Cook for two minutes, add to the potato, strain, stir in lightly the finely chopped parsley, and serve. If too thick, dilute with a little hot milk.

The principle of all vegetable soups is that of a white sauce diluted, with the addition of a vegetable. The flour is necessary even with the starchy vegetable, to "bind" the soup.

The fourth lesson will be the boiling of sugar to barley candy. In the course of the lessons children's attention will be called to the sweet taste of starch after mastication; different kinds of sugar will be shown them, and comparisons made between milk sugar, grape, beet, glucose, and cane; also between loaf sugar, granulated, confectioner's, powdered, and brown.

Weaving: Work on the cushion covers commenced in January will be continued. The apparatus, material, and plan for these are described in last month's COURSE OF STUDY, under "Textiles." To contrast with this primitive weaving, the large modern loom will be used in making a coarse cotton or linen fabric, such as was made by the New England colonists. If the curtain for the book-shelves, already begun, prove successful, it will be ornamented with original designs worked out in coarse wools.

Wood-work: After the use of the primitive and modern looms, and an excursion to the factory of the Mansure Company, Lake Street and Michigan Avenue, an attempt will be made to have the children invent and make a loom of their own, one large enough to weave fabrics of a yard in width.

Nature Study: (WILLARD STREETER BASS.) METEOROLOGY. The weather record by means of the color chart and graphical thermometer record will be continued this month.

ASTRONOMY. The sun's slant will be observed with the skiameter, and the area of level ground covered by a beam of sunshine of given cross-section determined and compared with that of previous months. At the same time the average temperatures of the months will be compared.

FOODS. The study of the common grains begun last month will be continued. Wheat will at first receive special attention. The class will study a single kernel, make transverse and longitudinal cuttings, and examine the sections with a hand lens. The use of the four concentric layers thus seen will be discussed. The class will then visit a flour-mill and watch the manner in which the various parts of the kernel are separated from each other and find the kind of flour which is obtained from each.

The children already know that starch occurs in flour, and is what makes the flour useful in making paste. They will now learn to recognize starch by the iodine test, and will examine all the grains for starch. They will also test other foods, such as potatoes, bananas, etc., for starch.

The class will determine by testing what articles of food contain sugar, and will find by comparison with the results of the above work whether these foods are the ones which also contain starch. The change of starch into sugar will be observed by chewing a starchy food for a long time and noting the change in its taste.

History: The history lessons will begin a comparison of the industries of the aboriginal Americans, contrasting their conditions with those of the early colonists. It is hoped that the view of these primitive beginnings may help the children to a better understanding of industries of our own time.

Children of the Fifth Grade are expected to know something about the history of the aboriginal tribes, and in addition to that to have been set thinking about the colonial life in early Massachusetts, Virginia, and New York. It is probable, however, that these particular children have not had work in the study of the aborigines, and therefore preparation will be made to teach it for the first time.

Beginning with Indian life, the method, in detail, will be:

1. Getting at the children's own experience in and knowledge of plains and mountains through oral and written expression or by means of drawings.
2. With pictures, stereopticon views, and descriptions bringing about clearer imaging of plains and forests as the homes of people.
3. Picturing in detail the Appalachian region, the St. Lawrence and Great Lake region, and the Mississippi Valley, giving temperature and prevailing winds, to let the children reason as far as they are able the habits and customs of savages native to each region.
4. Visiting museums, studying of pictures, and reading with the motive of learning more about the ways in which these early peoples found their food, obtained or made their clothing, and built their dwellings and defenses. Beyond this the study of Indian art and myth will give some sense of the Indian's thought about his own life and of his feeling toward nature.

Taking the Iroquois tribe as a type of the hunter Indian, the following points must be made clear in the development of the subject:

1. Effect of abundant game as food supply.
2. Lack of animals which could be domesticated.
3. Forest as affording protection and building material.
4. Importance of Indian corn.
5. Lack of incentive to the invention of tools other than the chipped or polished stone.
6. Plan of the Long-house explained by the needs of communal life.
7. Necessity for organization of tribes and clans; sachem, chief, and council; union of tribes.
8. Domestic life. Division of labor, primitive industries of building, horticulture, pottery, sewing and decoration of skins, making of stone implements, basket-weaving; all the natural consequence of environment.
9. Openness of the Mississippi Valley region as accounting for the building of mounds.
10. Same cause as explaining impossibility of advance in culture; lack of protecting mountain walls, which would have afforded opportunity for cultivating the arts of peace.

The life and customs of the Pueblos and Cliff Dwellers can be understood only through study of the geographical regions in which they were found. Some knowledge of the mountains of Arizona, Mexico, New Mexico, and Central America can be given through pictures, and this will be the basis of the children's reasoning for themselves the probable character, habits, and culture of the peoples. The method in this work will be the same as suggested above in connection with the study of the Iroquois, the following points being considered:

1. Structure of the Mandan house, as suggesting Pueblos.

2. Migration of northern tribes to the south and southwest.
3. Settlement in protected mountain places.
4. Necessity for irrigation involving change to agricultural habits.
5. Availability of clay as building material.
6. Evolution from sun-baked brick to rubble-stone and coral lime blocks.
7. Necessity for mutual protection expressed in the plan of the Pueblo village.
8. Greater protection of the Pueblos enabled them to progress further than other Indians in the science of government, in arts, and in the industries. Powers of government vested in (1) clan council; (2) sachem; (3) war chief. Differentiation in functions of offices — priests', tax-gatherers', speakers'.
9. Standards in domestic life higher than among Indians of the Iroquois type. Inheritance in the male line. Marriage laws.

Geography: The geography study will be planned to explain as much as possible of the history. That the children may get the conception of the continent of North America as the home of people, a powerful influence in shaping human life, they must be able to image something of its great masses of lowland and highland, and their relation to each other; the river systems, which explain so much of its building and wearing; soil, climate, winds, and animal and vegetable life.

Preparatory to direct work on the modeling of the relief map, it seems wise to make sure that the children have images of those elements which give life to the map. For that reason study and modeling of the continent have been preceded by pictures and stereopticon views of mountains, plains, plateaus, valleys, rivers, river-basins, forests, meadows, deserts, volcanoes, glaciers, and scenes of sea-action. Excursions to Lakeside and the sand dunes have taught the children the fundamental facts of the lake's wearing and building. This, with their experience at the seaside, and the pictures of coasts, can be built into the conception of the work done by the oceans in building and wearing the continent. Study of a few important rocks has given them a basis upon which to build their images of mountains — quartz, granite, gneiss, shale, mica, sandstone, and limestone, all of which they have tested by scratching and treating with acid.

Excursions to the lake-shore, to swamps, and to a farm have given opportunities for the study of soils, so the children know the story of the making of sand, vegetable mold, and garden loam. In the laboratory they have watched the workings of an artificial river, and have gained through that a notion of its wearing and building. Apparatus for illustrating rise and fall of a continent also is in process of construction in the laboratory.

In connection with the stereopticon views the children have been told the stories of the probable formation of the rocks, and the theories of the uplifting, folding, and volcanic eruption of mountains. With this as a basis, it is hoped that they may begin to image the continent as a background for the human life upon it.

The Indians, Cliff Dwellers, Pueblos, Eskimos, and early colonists will be pictured in their geographical positions, and the geography will be studied as explanatory of their characters and habits. The map of the whole continent will at first be modeled and drawn without much detail.

After the relations of the great highland masses, slopes, and plains have become sufficiently clear, the Mississippi Valley will be studied as the home of the Indians; the Appalachian and St. Lawrence region also as their home; the great western highlands as affecting winds and rainfall, and as affording protection to Cliff Dwellers and Pueblos.

Arithmetic: Arithmetic will be taught in measuring the effect of heat in evaporation of water. Evaporation, condensation, and precipitation of moisture will be studied in laboratory experiments, as relating to the questions of rainfall, distribution of moisture, and air movement; and as explaining primarily the existence of our great American forest and desert regions.

The introduction to this work will be the summing up of the children's observation as to causes of evaporation, cloud formation, rainfall, snow, hail, frost, and dew.

As helps to imaging conditions of these phenomena the following experiments will be made and discussed:

1. One gallon of water in a shallow wide vessel will stand for twenty-four hours in a place of low temperature. An equal amount of water in an exactly similar vessel will stand for the same length of time in a place of high temperature.
2. Same experiments will be made with deep, narrow vessels.
3. The same, again, will be performed with the quantity of water changed to 100 cubic centimeters.
4. Exactly similar experiments will be made, changing one condition—that of air movement. One set of shallow and deep vessels of water containing one gallon, or 100 cubic centimeters of water, will stand in a place of quiet; another set of equal quantities and proportion will be placed under a strong draught of air.

To understand the meaning of the experiments, the children must see and measure in each pair of experiments (a) in which case evaporation was greatest in volume; (b) how much greater; (c) what part of the volume of each evaporated; (d) what per cent of each volume evaporated; (e) difference in per cents.

Arithmetical processes will be taught at points where they are needed, and are not understood. After conclusions have been reached on the basis of results obtained in the experiments, the class will be asked to estimate amounts of evaporation of larger bodies of water varying in area.

It is hoped that these lessons will help children to image the larger work done by heat and air currents in distributing moisture over the surface of our continent.

Literature: As a means of getting more clearly at the standpoint of the people studied, we shall read as much as possible of their own thought as expressed in their literature. The truest translations available will be given to the children, and specimens of picture-writing shown at the same time.

Dramatic Expression: Certain parts of the literature read this month are considered sufficiently good from the literary and dramatic standpoint to bear the study necessary for oral expression. Some of these portions will be committed to memory, recited, and possibly dramatized. The bits selected are from Mrs. Ellen Russell Emerson's *Indian Myths*, and from original verses in *Reports of the Bureau of Ethnology*.

Reading: The children will read from *Stories of Industry* (Vol. II, pp. 82–99); selections from *Ethnological Reports*, IV and V; *Our Continent*, Shaler; Tarr and McMurry's Geography, *North America;* and opening chapters of *The Story of the Thirteen Colonies*, Guerke.

Writing: There will be ten minutes' daily practice in pen-movement; fifteen minutes each day will be spent in rapid writing of reports of laboratory work or cooking; conclusion of discussions, or personal experience or opinion on points of lessons.

Excursions: Excursions are planned to visit a flour-mill, a textile factory, and the Field Columbian Museum.

Art: Fine specimens of Indian art can be found in museums, and may also be studied in pictures. It is probable that contact with these beautiful objects and enjoyment of them will help greatly toward a more intimate knowledge of the life, thought, and feeling of the peoples who made them.

The children will make drawings and

paint pictures to illustrate scenes in Indian, cliff dwelling, and Pueblo life; bits of mountains, plains, and river scenery in connection with modeling the relief map of North America; illustrations of stories and myths. Indian statuettes and heads will be modeled in clay.

Music: (See Sixth Grade,outline.)

References: SCIENCE. American Kitchen Magazine (Dec. 1900, p. 93), *How Flour is Made and Branded; Stories of Industry* (v. 2, pp. 82-99).

HISTORY. Fiske, *Discoveries of North America*, v. I, Chap. 1; Bancroft, *Native Races;* Morgan, *League of the Iroquois, Ancient Society, Houses and House Life;* Cadwallader Colden, *History of the Five Nations; Smithsonian Report, 1887* (pp. 605-681); Bandelier, *Archæological Tour of Mexico;* Catlin, *North American Indians; Reports of Bureau of Ethnology,* (V, 1-5, 7-10, 13-15; V, 539-555; II, 9-45; IV, 473-521); Naidaillac, *Prehistoric America,* Chap. V; Shaler, *North American Indians;* Starr, *American Indians.*

GEOGRAPHY. Reclus, *North America;* Carpenter, *North America;* Shaler, *Story of Our Continent,* also *United States of America;* Mill, *International Geography;* Stanford, *Compendium of North America;* Russell, *Lakes of North America,* also *Rivers of North America, Volcanoes of North America;* Frye, *Geography.*

LITERATURE. Mrs. Emerson, *Indian Myths;* Brinton, *Myths of the New World,* also *American Hero Myths;* Leland, *Algonquin Legends of New England.*

German: To overcome the beginners' difficulties in reading, besides Ahn's *Primer,* picture-books, and especially books for children of this and later ages, will be used. A list of the best of these books will be given which may help to make reading interesting and easy in class and at home. Writing exercises in small letters will be continued. The grammar topics are: Formation of plural, sentences involving the first future of "sein" and "haben." Exercises in addition, subtraction, multiplication, and division will be continued after the plan given in the January number. Questions and answers relating to time: names of the months, days of the week, division of time, will serve as a beginning in the language of every-day life. The memory work for February and March is:

Walter, Wilhelm Tell's boy, sings:

Mit dem Pfeil, dem Bogen
Durch Gebirg und Thal
Kommt der Schütz gezogen
Früh am Morgenſtrahl.

Wie im Reich der Lüfte
König iſt der Weih —
Durch Gebirg und Klüfte
Herrſcht der Schütze frei.

Ihm gehört das Weite;
Was ſein Pfeil erreicht,
Das iſt ſeine Beute,
Was da fleucht und kreucht.

Friedrich Schiller,
„Wilhelm Tell, III, 1.“

Sixth Grade

Edith Foster Flint

Geography: The month's work will include a study of southwestern Asia—the region much of which Marco Polo crossed, and which embraced an important part of the old routes of trade between Europe and Asia. The children will first see it as a whole, as a table-land of the extent of Thibet, but much lower, with Arabia extending in peninsular form at its southern extremity into the Arabian Sea. They will note the waters which wash its boundaries—the Arabian Sea, the Persian Gulf, the Red Sea, the Mediterranean, the Caspian, and the Black seas, and the mountains which help to mark it off—the Suliman and Hindu Kush ranges on the east, and the

Caucasus on the north. They will note that but one important river basin appears in the region—the Tigro-Euphrates. They will compare its length (2,500 miles from east to west), its breadth (250 to 600 miles), and its elevation (2,000 to 8,000 feet), with the corresponding measurements of other countries they have been studying or are familiar with. They will model plateau and peninsula in sand and in chalk. After a conception of the region as a whole has been gained, they will proceed to study in more detail the geography of the principal political divisions.

I. ARABIA: 1. A peninsula; irregular parallelogram in form; length, 1,300 miles; greatest breadth, 1,500 miles; breadth at apex, 900 miles. (Compare with India.)

2. Geographical divisions: the coast ranges; the desert ring; the central plateau.

3. Coast-line: few harbors.

4. Climate of these regions; rainfall; drainage; salt plains.

5. Effect of climate and configuration on occupations of the people: herding; agriculture; weaving.

6. Exports: camels, sheep, hair, wool, coffee, dates, horses, pearls.

II. PERSIA: 1. A table-land dropping to the Caspian Sea for nearly one-third of its northern frontier, and to the Persian Gulf for its southern limit; mountain ranges and broad intervening plains; irregular mountain masses, with fertile valleys, basins, and ravines.

2. Geographical divisions: lowlands are the coast tracts; in the north these are wooded, and climate is damp, feverish, and relaxing; in the south, dry and barren, with hot and violent winds; the highlands are central; the salt desert of Khurásan.

3. For irrigation the plains and valleys depend on the mountains; water supply always scanty; rivers not big enough to reach the sea; consequent salt pools and lakes.

4. Herding; weaving; Persian rugs.

In the consideration of Afghanistan and Asia Minor, which form part of the Iranian plateau, the position of the two regions—the first between Russian and British territory, and the second between Europe and Asia, with its general effect on their history and peoples, will be discussed. For the rest, the nature of the peoples and their occupations will be taken up. Throughout the month the influence of climate and configuration of the land on occupation and nature of the people will be strongly emphasized.

References: Articles on *Asia, Afghanistan, Arabia, Armenia, Mesopotamia,* and *Persia,* in *Encyclopedia Britannica.* Articles on *Arabia, Persia, Afghanistan,* in *International Geography.*

Science: The work for February, like that for January, will closely correlate the science and the cooking with each other and with the geography. The plan for this month embraces a study of coffee, tea, cocoa, and milk—all products of the countries under consideration. In studying coffee, tea, and cocoa, the children will first see these articles themselves in their various stages of growth and preparation, the specimens to be obtained from the museum and from one of the large wholesale grocers. They will then be shown pictures illustrating the methods employed in the cultivation of the plants and in the preparation of them for market. In each case they will study: (a) the natural history of the plant; (b) its preparation for market; (c) the varieties and cost of the product; (d) the places where it grows; and (e) its history. The work will afford excellent opportunities for expression, both in writing and in painting.

The study of MILK will demand laboratory work in the following ways:

1. The presence and amount of water in milk to be shown by weighing the milk and then boiling off all but the solid ingredients. (Up to this point this grade has done no work with the scales.)

2. The presence of mineral matter to be shown by the burning off of all but the incombustible part of the solid residuum.

3. The presence of fat to be shown by churning.

4. The separation, by means of acid, of the curd and whey.

5. The sugar test is too complicated for the Sixth Grade, but a bottle of milk sugar will be shown in evidence of the presence of sugar in milk.

History: The subject for the month is Florence. In the study of Venice much time was spent in the consideration of Venetian achievement in architecture and art. The work for February goes a step farther in this direction, and takes up Florence, not from the historical point of view, but from that of the City Beautiful. The children will learn the story of Cimabue and of Giotto; they will study pictures of Giotto's tower and of the Brunelleschi gates. They will see pictures of the city, and will compare its aspect with that of Chicago and of other cities with which they are familiar. From all this they will derive the knowledge that in Florence art was not merely a thing to be kept carefully glazed and framed and hung on the wall in houses and galleries, but was "a thing to walk with hand in hand." This fact they will discuss and will compare with the state of affairs in modern cities, particularly in America, and will inquire into the causes of the difference. (Several of the Sixth Grade children have traveled somewhat extensively here and abroad.) They will be shown particularly pictures of statues and paintings which, though situated in public places and often out of doors, have been perfectly preserved, not harmed by the people. (Luca della Robbia's medallions on the Foundling Hospital, and the experience with the triangle of ground in Chicago taken in charge by the Women's Club, may be used as typical examples.) The story of Cimabue's Madonna and Child borne from his studio to the church in a festive procession of the people and trumpeters may serve to bring vividly home to the children's minds the attitude of even the common people in Florence toward art. From this point something about Gothic architecture and the freedom it afforded the artisan for the display of individual powers and fancy will be introduced and contrasted with modern plans of decoration. In contradistinction to this prevailing tendency, however, the Arts and Crafts movement may be cited.

The aim of the month's work will be to build up a conception of civic beauty and to stimulate an interest in the artistic needs of our own city. The last part of the work will consist of discussions as to what means, both negative and positive, we may use to make our city beautiful.

Speech, Oral Reading, and Dramatic Art: This grade is reading this month Kipling's stories of animal life, and in the effort to be understood by the rest of the class each individual is gaining in skill, in power to think by means of the printed page, and is also beginning to feel the necessity for clear enunciation, and for speaking out.

We shall follow the study of India by a reading of the story of *The Demon of the Matted Hair*, one of the Hindu myths, and of the *Tar Baby*, by Joel Chandler Harris, noting the points of resemblance in thought and in construction.

The children will commit these stories to memory and tell them to the class.

The poems *Yussouf*, by James Russell Lowell; *Harmosan*, by Richard Chenevi French; *Abou Ben Adhem*, by Leigh Hunt, and *The Leap of Roushan Beg*, by Longfellow, will be read by the children. All these are stories of the countries in which they are especially interested this month and the one which, at the time, seems to appeal most strongly to them, will be studied for oral expression.

Music for the Fifth and Sixth Grades: These grades have begun to do some individual singing, with immediate good results. The attempt to express the thought or feeling as it appeals to them, even though it shows no variety or power to wield the rhythm of the song, and make it bend to the text, is successful in the most important respect—it produces a more vital quality of tone. Some of the independence and self-poise needed by people of this age will be acquired in this way.

Songs: *Flag Song*, February COURSE OF STUDY; *Hurrah for the Flag*, *The Snow Man*, Modern Music Series, Second Book; *In February*, Songs of Life and Nature; *Hail, Columbia*, Modern Music Series, Second and Third Books; *Fatherland's Psalm*, Grieg; Seven Children's Songs, Augener & Co.; *The King of Love*, Songs of Life and Nature.

Painting: An hour each week will be devoted to the painting of a landscape as viewed from the windows of the Academy of Science in Lincoln Park.

Clay-modeling: As in the case of China and of India, the children, while studying Persia and Arabia, will illustrate characteristic figures and industries in clay.

Sand-modeling and Chalk-modeling: These will both be largely used in connection with the work in geography.

Number work: Much number may be taught through the geography. (See Seventh Grade outlines for January.) It may be, also, that in connection with the history the children will learn something of the geometry of design.

References: Carpenter, *Asia* and *South America* (pp. 257–267); Chisholm, *Handbook of Commercial Geography* (pp. 118–121 and 122–128); Eliot, *Romola*; Fergusson, *History of Modern Styles of Architecture* (pp. 117–125); Harvey, *Our Cruise in the Claymore*; Hawthorne, *French and Italian Notebooks* (pp. 269–432); Kirby, Elizabeth and Mary, *Aunt Martha's Corner Cupboard* (pp. 14–42 and 56–74); Meiklejohn, *New Geography* (pp. 299–322); Mill, *International Geography*; Oliphant, *Makers of Florence*; Palgrave, *Narrative of a Year's Journey through Central and Eastern Arabia*: Reclus, *Earth and Its Inhabitants* (v. 4, *Asia*, and v. 4, pp. 448–449, and 463–464); Rodenbough, *Afghanistan and the Anglo-Russian Dispute*; Stanley, *Sinai and Palestine*; Symonds, *Sketches and Studies in Italy and Greece* (v. 2, pp. 201–257); Taine, *Italy: Florence and Venice* (pp. 71–159); Wilson, *Handbook of Domestic Science and Household Arts* (pp. 98–108 and 129–141); Wing, *Milk and Its Products*.

Sixth and Eighth Grades

German: In the reading exercises, besides Ahn's *Rudiments in the German Language*, the books indicated for the Fifth Grade will also be helpful here. That the pupils may obtain some skill in German script, special exercises with this in view will be continued. Exercises in arithmetic, as given in the January number, will be continued and extended. The special subject of study in these classes for this quarter is Roman history. The pupils therefore will be given a special selection, the legendary struggle of the Horatii and Curiatii, which will serve as a sort of composition (Aufsatz), furnishing exercises in forming simple phrases, and in declension and conjugation. The memory work will be:

Das Schwert.

Zur Schmiede ging ein junger Held,
Er hat ein gutes Schwert beſtellt;
Doch als er's wog in freier Hand,
Das Schwert er viel zu ſchwer erfand.

Der alte Schmied den Bart ſich ſtreicht:
„Das Schwert iſt nicht zu ſchwer, noch leicht;
Zu ſchwach iſt Euer Arm, ich mein';
Doch morgen ſoll geholfen ſein.“

„Nein, heut, bei aller Ritterſchaft!
Durch meine, nicht durch Feuers Kraft.“
Der Jüngling ſpricht's, ihn Kraft durchdringt,
Das Schwert er hoch in den Lüften ſchwingt.

Ludwig Uhland.

Seventh and Eighth Grades

Katharine M. Stilwell Nott William Flint

Nature Study: I. RESPIRATION: It was found advisable to teach the children something of the mechanics of respiration before taking up the subject of ventilation; so this outline should properly have come in the December number. Let the children observe the reactions of the constituents of normal air in simple laboratory experiments.

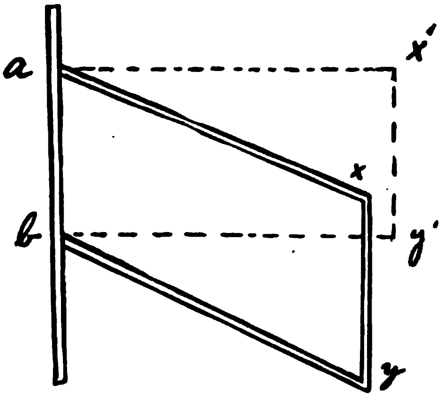
Note what happens when lighted sulphur, phosphorus, the glowing end of a match, or a red-hot bit of iron or steel spring is thrust into a jar of oxygen.

Make nitrogen before the children by burning phosphorus in a jar of air inverted over a basin of water. Perform the same experiments as with the oxygen, and have the children note results, and tell whether nitrogen or oxygen is probably the more important element to human beings. Give them the proportions of normal air: N 79%, O 20%, CO_2 .04%, and teach them the meaning of the chemical symbols.

II. ORGANS OF RESPIRATION: (Use pictures, diagrams, and apparatus as far as possible.) Mouth, nose, throat, bronchial tubes, lungs, pleura, diaphragm, ribs, and respiratory muscles. (Avoid the multiplication of scientific terms; the object is to make the child understand how we breathe.)

III. MECHANICS OF RESPIRATION. 1. The dilation of the thorax (best demonstrated by use of a skeleton) as shown by: (a) The double sloping of the ribs, so that when they are lifted in front and rotated in their sockets the chest cavity is increased in size. (b) The depression of the dome-shaped diaphragm into a cone-shaped membrane, and the consequent increase of the chest cavity at its biggest end.

2. How the lifting of the lateral walls of the chest increases the volume of the thorax may be shown diagrammatically by the use of a simple piece of apparatus which any child can make.



The parallelogram frame *axby* is made of any convenient size, with the joints slightly loose, so that it can be moved upon the backbone *ab*. Let *ab* represent the backbone, *ax* and *ay* the ribs, and *xy* the sternum. Then *axby* would be the normal position and *ax'by'* the ribs in the extended or inflated position. Compare the areas of the two figures. Which is larger?

3. Let the children hold their hands to their sides, take a deep breath, and then tell whether there is any other than an upward movement to the ribs. The mechanism of the lateral extension should be shown on a skeleton if possible. Abnormal forms of respiration and their uses: coughing, sneezing, snoring, crying, sighing, and laughing.

Number Work: (The examples are suggestive.) 1. It appears that the body takes up in respiration 4.782% of O from the air inhaled, and gives off (about) 4.38% of CO_2. What is the ratio of CO_2 expired to O absorbed?

2. If a person breathes 30 cubic inches of air per inspiration and makes 25 inspirations a minute, how long will it take him to breathe all the air in a room 20x10x10 feet? How long will it take 15? How long will it take this class to breathe the air in the room?

3. Air containing .40% CO_2 is bad for breathing. How long will it take to spoil the air in this room if the doors and windows are shut tight? (Factors: the number of persons; the average number of inspirations, and the per cent CO_2 given off by one person.)

4. If the air is rendered injurious when .2% of CO_2 is present, how many cubic inches of air do you render impure by each respiration?

5. How many cubic feet do you render impure per hour?

References: Any good physiology; Jackman's *Nature Study*.

Geography: (In correlation with history.) I. THE CENTRAL HIGHLANDS: North of the Danube from the Carpathians to the Rhine. Note the sweeping curve of the Alps from the Gulf of Lyons to the neighborhood of Vienna. This central ridge will make a good starting-point for the teaching, for as the birthplace of Europe's mightiest rivers, as the natural barrier between her mightiest peoples, a prime factor in the distribution of its climates, and in modern times the noblest of all international playgrounds, the Alps play a large part in the economy of the continent.

SURFACE: Suppose the class to be standing upon some lofty peak of the northern Alps, and to look northward. What would the country look like? What would they see?

Irregular lines and groupings of hills rising from a central table-land intersected by deep-cut valleys of rivers. 1. Central knot, Fichtelgebirge. 2. Eastward, Erzgebirge and the Bohemian forests. 3. Farther east, Sudettes. 4. Westward, Thuringian forests and Franconian Jura, and south of these the Suabian Jura, which joins on the Black Sea. (Class will mold these highlands in sand; they should read as much as possible on this part of Europe, and see all kinds of pictures of the country and the people.)

I. RIVERS: Weser, Rhine, Elbe, Main and Neckar. With the relief map before them the class should reason out the comparative age of the rivers and the highlands.

II. The Northern Plain: Surface; formation. Coastal plain of the North Sea. Rivers.

III. Climate as dependent upon: 1. Nearness to sea. 2. Direction of prevailing wind. 3. Elevation. 4. Latitude. After studying these conditions the students will be led to infer the climate of this region.

IV. The political divisions of to-day: 1. Boundaries; shape; size, 212,000 square miles.

2. Commercial position: Chief exports and imports. Relation of these to the industries and manufactures. Upon what does the chief industry depend? Who is the chief customer?

3. The people: Social condition. The Agrarian, the Socialist, and the Imperial parties. Population, 50,000,000. What is the average density.

4. Internal improvements:

(a) Railways, 29,600 miles. (b) Telegraphs, 57,000. (c) Canals, 15,000. (d) Macadamized roads, 70,000.

5. Government: Colonial possessions — Africa. Islands of the Pacific. Extent, 1,020,-680 square miles. Population, 10,650,000. What is average density. Why do Germans emigrate to America.

II. THE NETHERLANDS.

I. Position: Holland is one-fifth below the level of the sea. Area of subsidence for the most part is nothing more than the delta of the Rhine.

II. Commerce: Imports, $602,500,000. Exports, $490,000,000. Most important are the products of agriculture and stock-raising. Means of transportation, 9,500 miles of roads and dykes; 7,000 miles of tramways (mostly steam); 2,000 miles of railways.

III. Colonies: Java, 52,554 square miles. Dutch East Indies, 685,846 square miles. Dutch West Indies, 403 square miles. Dutch Guiana, 46,060 square miles. How do its position, its commerce, and its colonies affect the importance of the Netherlands?

III. Surface: (Show pictures of Holland.) Mold Netherlands in sand. How was this land made? What part has man played in its history?

IV. Rivers and canals.

V. Area: 12,728 square miles — 26% agricultural, 35% grazing, 7% forest, 20% waste. Find number of square miles of each.

VI. From latitude and position with regard to North Sea and the elevation let the children determine what the climate is.

VII. The people: Occupations. Government.

III. DENMARK.

I. Surface: West and north, moorland. Southeast and in the islands, hilly.

II. Area: 14,124 square miles. Area of peninsula, 9,752 square miles. The Faroes. Coast of Greenland. Iceland. West Indies—St. Thomas, St. John, St. Croix. (United States is trying to buy the Danish West Indies now. Why?)

III. Coast-line: 5,000 miles. What is the number of miles of coast-line to each square mile of area?

IV. Occupations of people: One-fourth are in agriculture. Crops — rye, wheat, oats, and barley. Manufactures: Porcelain.

V. People: 2,000,000. Government.

IV. RUSSIA.

I. Size and shape: Area, 2,090,000 square miles; length, 2,400 miles; width, 1,800 miles.

II. Commercial position: What is Russia's place in the commerce of the world? Ports.

III. Surface: A vast plain; tundras. North Russian lowlands. North Russian table-lands. Steppes. Caspian depression.

IV. Drainage: 1. North: Petchora, Dwina. 2. Baltic: Neva, Dura, Niemen, Vistula. 3. Black: Dniester, Dnieper, Don. 4. Caspian: Volga, Ural. Volga has 200 mouths in its delta, and is 2,230 miles long. Character of rivers.

V. Lakes.

VI. Climate: Plain open to north and south. (Effect of this?)

VII. Black lands: Between Carpathians and Urals, 240,000,000 acres.

VIII. Industries: 1. Agriculture: Wheat, maize, oats, and rye. 2. Fisheries and grazing.

IX. Commerce.

X. Waterways and landways: 24,000 miles of navigable rivers; Trans-Siberian railroad.

XI. People: 88,000,000. Government; compare with that of United States. Readings from Gogol's *Taras Bulba* and from Tolstoi's *Resurrection.*

References: Ballou, *Footprints of Travel;* Chisholm, *Handbook of Commercial Geography;* Reclus, *Bird's-eye View of the World;* Ibid, *Earth and Its Inhabitants;* Mill, *International Geography;* James Sime, *Geography of Europe;* Henty, *Lion of the North* (illustrative of the Thirty Years' War); F. W. Longman, *Frederick the Great and the Seven Years' War;* Yonge, *Young Folks' History of Germany;* Motley, *Rise of the Dutch Republic;* Wallace, *Russia.*

Number work: (Correlated with geography.) 1. The Haarlem engineers at a cost of $765,000 recovered from the sea an area of 15,000 acres. What did the work cost per acre?

2. The Volga from its source to its mouth is 1,005 miles as the crow flies; its actual length is 2,130. What is its average length per mile of distance?

3. The basin area of the Danube is 299,435 square miles. What per cent of the continent of Europe is this?

4. Europe has an area of 3,823,383 square miles. If the material of which the Alps are composed were spread equally over the surface of the continent the level would be raised 89 feet. How much material is there in the Alps? What is the average size of the eighteen countries of Europe?

5. Germany has an area of 133,695,000 acres, a population of about 50,000,000, and a forest area of 13,924,000 acres. How much arable land is there per person? What per cent of the land is covered by forest?

6. In 1787 there was said to be 144,000,000 people in Europe, and in 1874, 309,178,000. What was the average annual increase? At the same rate what would the population be now?

History: (TEUTONIC MIGRATIONS.) I. Locate the Teutons at home in the forests of Germany.

Have the children observe pictures of the country from geographical books and from the school picture collection. Infer the character of people in such an environment.

II. Read from the *Germania* of Tacitus a description of the Teutons.

III. Have the children place themselves in a similar environment, and reason out what their life would be. Take up the following points:

1. The village community.
2. The houses; the common land.
3. Appearance of the people; their dress; their arms.
4. The occupations; implements. Use pictures and sketches by the teacher to illustrate the above. Visit the museums.
5. The government: The village assembly; the growth of representation. Criminal law; "eye for eye"; the blood-wite; compensation by family. Class will read Chapter I in Green's *Short History of the English People.*
6. Classes of society: (a) chief; (b) nobles by birth, earls; (c) freemen, céorls; (d) slaves, prisoners of war or criminals.

IV. Rise of kingship.

The pupils will reason out the steps between the choosing of a strong man for leadership in war and the development of the kingship.

Read from Guizot's *History of France* the story of the *Vase of Soissons.*

V. Their contact with Rome.

Read Kingsley's myth of the Troll-garden, from *The Roman and the Teuton.* Recall the barbarian encounter with (1) Marius; (2) Cæsar; and discuss what the Teutons gained from Rome.

VI. Compare the Teutonic and the Roman principles of government.

VII. The Teutonic movements. The causes. Trace routes over Europe. From relief maps the class will judge what routes would be chosen.

VIII. The invasion of England.

References: Tacitus, *Germania;* Green, *History of the English People;* Kingsley, *The Roman and the Teuton;* Guizot, *History of Civilization;* Emerton, *History of the Middle Ages.*

French: Since Mlle. Ashléman is attempting to correlate French closely with other subjects, there will be no outline for this month—the work is too experimental to be forecast. Next month, however, Mlle. Ashléman will publish a report of her experiments in correlation.

Art: In connection with the history, the class will paint and draw pictures of some of the stirring scenes and events which occurred in the Gothic invasions of the Roman Empire.

Speech, Oral Reading, and Dramatic Art: We shall continue the study of Julius Cæsar begun in January. The relation of this drama to the history of Rome, in which the children are interested, need not be discussed, since it is in the spirit and atmosphere of the times. They read the play first for the story, just as we do, reading it many, many times. No attempt was made to get at the meaning of difficult words, phrases, or constructions. They told the story in as short a time as possible, speaking always to the whole school. Then followed discussions as to what were the essential parts of the story. The result was the story in its simplest form. When the children had written the story, they passed easily to a synopsis of the play. The study of character began unconsciously with the first readings. The children know the people in the play and the conditions under which they are acting. They are real men and women, real human beings. The class has learned to make comparisons, to draw inferences, to search for the motive of action, proving each statement or opinion by the text. They have learned to weigh the words of Brutus and the other men—when Brutus speaks alone in soliloquy and when he speaks to or of others. They judge in a measure by the public opinion—what other men say of him—and his own deliberate and impulsive acts.

By this study the greater part of the play has been read orally and the construction of the play is familiar to the children. In February, or as soon as they are ready for it, we shall prepare for dramatic presentation some of the great scenes, beginning with the first scene of the first act as an introduction, and passing on to the second scene.

Music: There is very little material for correlation in the subject-matter of the songs for these grades, and it is of far less importance here than in lower grades. This is partly because the children have already fixed habits of self-consciousness which make reference in an emotional form to what are to them the commonplaces of their lives seem forced and artificial. The chief reason, however, is that singing is above all a highly spiritual form of expression and tends naturally to get further and further away in its subject-matter from the concrete, and nearer the spiritual.

Songs of general import, ethical songs, and hymns are found most practicable for these children, and less attention is paid to expression of feeling than to simple matters of technique which tend to make the declamation of the song intelligent and intelligible. These are chiefly distinctions of enunciation and the taking of the breath in places which help to make the sense of the text clear.

A few of the boys have been excused from singing altogether on account of the change of voice. The children chosen for alto parts are not merely the musical ones who can do it easily, but those having alto voices, and those whose upper tones are in poor (not merely undeveloped) condition. A short review of Tyrolese and Highland songs and some Norwegian mountain-songs will be made in connection with the geography work. This will consist in listening to the songs played or sung for them and discovering their salient characteristics.

Songs: ***Flag Song; Fatherland's Psalm,*** February Course of Study; ***Hail, Columbia,*** Modern Music Series, Second and Third Books; ***The Hardy Norseman,*** Modern Music Series, Third Book; ***Morning and Night, The King of Love,*** Songs of Life and Nature.

Algebra for the Seventh and Eighth Grades.

George W. Myers.

62. If A denote the *amount*, P the principal, t the time in years, and r the rate, write an equation for A.

63. By dividing and transforming the latter equation, derive all the cases of simple interest.

64. Let P represent the principal, or the annual rate, t the number of years, I the compound interest, A the compound amount, and a the compound amount on one dollar. What is the amount for one year? For two years? For three years? For four years? Whence for t years it is Pa^t, or $A=Pa^t=P(1+r)^t$. Here give problems to show the efficiency of these equations.

Note.—The interest is supposed to be payable annually. What would the above equations become if the interest were payable quarterly?

Multiply 17 by 23 and notice carefully what operations you perform. You say 3 times 7 equals 21; then 3 times 1 ten equals 30 units; then 7 times 2 tens equals 140 units, and finally, 2 tens by 1 ten equals 200 units; then you add all these products, thus: $21+30+140+200=391$. These operations are more obvious by proceeding thus:

$$17=10+7$$
$$23=20+3$$

The products are then formed by multiplying both parts of 17 by 3, and then both parts by 20. These four partial products are then added to obtain the product of 17 by 23.

The problem might also have been solved thus:

$$17=20-3$$
$$23=30-7$$

Here we should first multiply 3 by 7, then 20 by 7, and subtract the former product from the latter. Then we should multiply 3 by 30 and 20 by 30, and again subtract the former from the latter. Finally we should subtract the first difference from the second, whence we should obtain the same result as before, viz., 391.

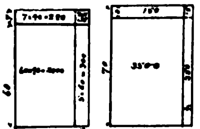


Fig. 43.

65. Apply both of these methods to 67×45, writing the problem first, $(60+7)\times(40+5)$, and second, $(70-3)\times(50-5)$, and compare the partial products in the first case with the parts of the first oblong and those of the second case with the parts of the second oblong in the cut.

66. Apply both methods to 54×36 and illustrate by diagrams as in 65.

67. Apply these methods to 56×96 and illustrate them by diagrams.

Note.—We see thus that $78\times63=(70+8)\times(60+3)=70\times60+70\times3+8\times60+8\times3=4914$, or that $78\times63=(80-2)\times(70-7)=80\times70-80\times3-2\times70+2\times3=4914$.

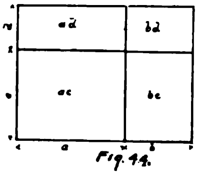


Fig. 44.

68. Show by referring to the diagram that $(a+b)\times(c+d)=ac+ad+bc+bd$.

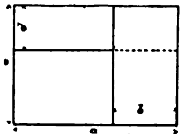
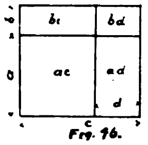
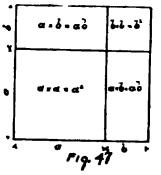


Fig. 45.

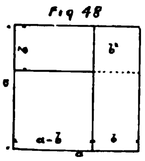
69. Show in the same way that $(a-b)\times(c-d)=ac-ad-bc+bd$.



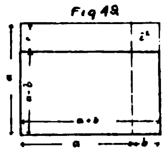
70. Draw a diagram and show by its aid that $(a+b)\times(c-d)=ac+bc-ad-bd$.



71. Referring to the adjoining figure, show that $(a+b)\times(a+b)=a^2+ab+ab+b^2$, or more briefly, $(a+b)^2=a^2+2ab+b^2$.



72. In the same way show that $(a-b)^2=a^2-ab-ab+b^2=a^2-2ab+b^2$.



73. Similarly that $(a+b)\times(a-b)=a^2-b^2$.

74. From 68 make a rule for multiplying the sum of any two quantities by the sum of any other two quantities.

75. From 69 write a rule for multiplying differences.

76. What rule can you make from 70 and to what form of numbers will it apply?

77. Make a rule from your solution of 71; of 72; of 73.

78. Test all the equations from 68 to 73, calling $a=27$, $b=24$, $c=15$, $d=8$.

79. The two sides of the triangle in the figure are equal. If the area of the triangle is t, what is the area of the square on either short side? Denote the square on either short side by a^2. What equation can you write between a^2 and t? Between a and t?

NOTE.—The square root of x is indicated thus $\sqrt{x}$ and read "square root of x."

80. Calling the square on the long side b^2, what equation can you write between b^2 and t? Between b and t? From these two equations what third relation can you derive between a^2 and b^2? Between a and b? What relation is there between the squares on the three sides?

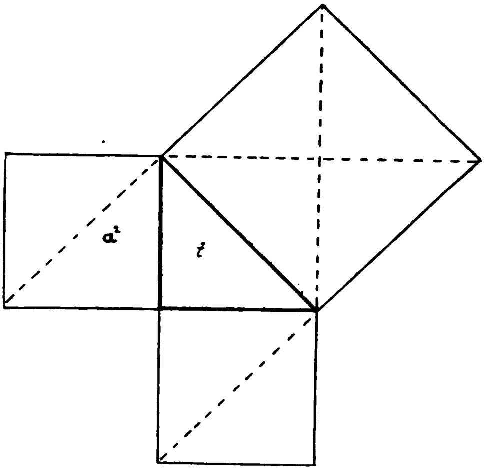


FIG. 50

81. In the figure denote the sides of the right triangle by a, b, and c, and the areas of the various pieces by the letters which stand within them. Draw a figure such as the one indicated and cut along all dotted lines. See whether the pieces having the same letters will fit over each other. Denoting the square on a by a^2, on b by b^2, and on c by c^2, write an equation

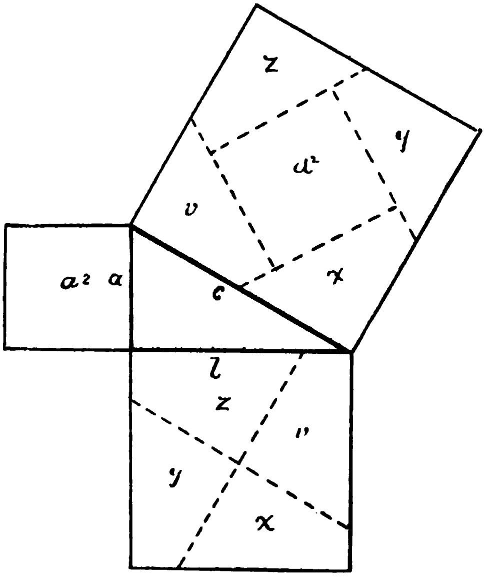


FIG. 51

expressing b^2 in terms of the parts into which you have cut it; another equation for a^2 and another for c^2. Add the values of a^2 and b^2, member to member, and compare the sum with the value of c^2. What principle can you discover for the sides of this triangle? Compare this principle with the result of the last exercise. Perform this experiment with more than one right triangle. Does the principle hold for triangles not right angled?

This is one of the most important principles of geometry and should be thoroughly understood.

82. Draw very accurately a number of right angled triangles, measure their sides and test the principle of Ex. 81.

Definition: The side opposite the right angle in a right angled triangle is called the ***hypothenuse.***

It is known that the early Egyptians paved the floors of some of their buildings with isosceles right triangles. From this it has been suggested that the Egyptians knew this proposition for this special triangle. What do you think of the suggestion?

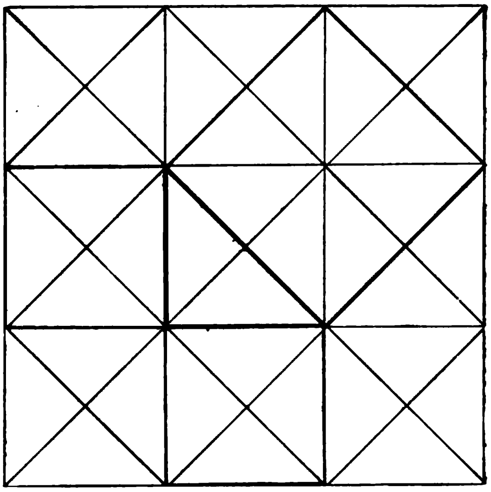


FIG. 52

The High School

Latin, Eighth and Ninth Grades: (ALLEN W. GOULD.) Lessons XII, XIII, and XIV, printed in the January COURSE OF STUDY, are simplified from Livy. The twelfth tells how the Roman matrons met by themselves and voted to give their ornaments to the treasury to pay a vow that had been made to Apollo. This story adds one more detail to the growing picture of the Roman matron. The pupils have seen her spinning and weaving the clothing of the family, and keeping her house with dignity and honor, as well as watching the omens and advising and encouraging her husband to do great deeds. Now the Roman matrons are seen to assemble by themselves and discuss the serious public matter of an unpaid debt to Apollo, and finally resolve that the debt shall be paid, and furnish the means for paying it.

The family life that made this high position of woman possible will seem perfectly natural to the students, because it is so much like our own modern home, and it may be necessary for them to see the position of the wife in Athens or in Asia at that time in order that they may appreciate the difference between the woman of the East and the woman of the West.

The maternal family as found among the American Indians, where the mother has to think and act almost wholly for herself and her children, can be described and contrasted with the Oriental family, where the wife is a cipher, and with the Roman and Anglo-Saxon family, where both husband and wife think and act. The pupils may then be asked which of these family types is the most helpful in making this world better. They may also be asked what danger there would be in the Roman family if both husband and wife thought for themselves. Would they be apt to think differently, and so divide the home?

How far would this danger be avoided by the law giving the husband supreme authority? The students can then be asked to watch the Roman family, as they see more of it, and find out whether it went to pieces.

This lesson also makes another addition to the pupils' ideas regarding Roman roads and carriages. The extreme rarity of wheeled vehicles in the city and the character of the streets will help to make the picture of Roman life more distinct, while the trip of Horace (Sat. I, 5) to Brundisium can be told briefly and so give distinctness to their idea of Roman traveling. They should make a map of southern Italy, putting in all the towns they know and connecting Rome with Capua, Beneventum, Brundisium and Tarentum by the Appian Way. They can measure the distances and calculate how long it would probably take Horace to make the journey, and their results can be compared with the actual time. The incidents of bad water, gritty bread, and smoky fire will help the students to realize the discomforts the Romans had to suffer as they traveled over the world to establish law and order.

In studying the construction of the Roman roads it may be well to begin by asking the class what they know about modern roads. The two or three individuals who seem most interested may be asked to report to the class what the best modern roads are and how they are built. Two other students may be asked to find out what they can about Appius Claudius Cæcus, the first road-builder. The rest of the class can be required to report on different parts of the ancient roads as found described in the references to the lesson. Throughout the whole study the function of the roads in bringing mankind together should never be lost sight of.

It might be well to have the pupils find out whether the United States, measured by days' journeys on the railroad, was larger or smaller than Italy, measured by days' journeys on foot or on horseback.

Lesson XIII gives the story of Horatius at the bridge, and so adds another important detail to the idea of the roads. Even the wooden bridges removed the barriers which the rivers offered to the coming and going of merchants and magistrates, but when the Romans found out how to use the arch, and threw the massive causeways of stone over the mighty streams, they helped the world to take one of its greatest steps toward the fellowship of all mankind.

The typical Roman is seen in Horatius, brave but prudent, pious but self-reliant. Some of the students will be asked to read the fuller account in Macaulay's well-known lay, while others report on the material found in the references given in the January COURSE OF STUDY and in Smith's *Dictionary of Biography* under Cocles.

Lesson XIV gives the story of Tarpeia's treachery, and reinforces the stern ideal of the Roman maiden, which the students have already seen in Virginia. It also shows another use to which the Romans put the arch in bringing streams of water into the heart of the city. This was a great step in the evolution of the city. Under the empire Roman law and Roman aqueducts enabled men to live together in health and harmony. Some of the students can report on the water systems of New York and Chicago, while others report on the material found in the references. The picture of the Greek girls gives a vivid idea of the way the water was carried before it was distributed among the houses and the way it was procured for some houses even in Rome, as the line from Plautus shows.

The story of the siege of the citadel will afford a good opportunity to tell the students the primitive condition of the settlements on the seven hills as shown by recent excavations. Starting with this primitive picture, the history of the growth of the Roman state can be read in extracts from the *Vivi Romæ*, which it is expected the students will be able to read by the time they have finished these fourteen lessons.

At the Christmas festival one of the characters represented was Julius Cæsar in tunic and toga. These garments were made of wool, as nearly as possible like the Roman originals, the toga being an ellipse fifteen feet long by ten feet wide, the shape approved by Marquardt in his *Privatleben der Römer*. The Latin classes of the Ninth and Tenth Grades were present at the draping of the toga, so that they could realize what the wearing of the toga meant and understand why the Romans were so glad to escape it. There was no difficulty in reproducing the folds shown on statues not later than Cæsar's time.

Ninth and Tenth Grades

Latin: This class will continue the study of the influence of Rome upon modern Europe by reading Cæsar's *Gallic War*, I, 6-14. The students will investigate the composition of the Roman army and the form and meaning of the camp by using the reference already given in the COURSE OF STUDY for October (p. 177). The references will be distributed among the different members of the class, and some of the pupils may be asked to make wooden models of such parts of the Roman and Gallic armor as can be easily reproduced in the Manual Training room, so that they may be familiar with its size and weight, and realize how far it differed from our weapons of to-day. The students will also make maps of the country, to give them more definite ideas of the physical form of what is to be the scene of all European history.

Greek: The beginners in Greek will continue reading the conversations of Socrates simplified from Xenophon to get at Athenian thought, and the history of the Persian War in Moss' *First Greek Book* to learn the historic background; while the lessons in Atherton's *First Greek Book* will be kept up, to help in mastering the forms as described in the January COURSE OF STUDY (p. 475). The exact amount of ground we shall cover we cannot tell until we find how readily the different students assimilate the different ideas. In connection with this reading we shall take up the ritual and mythology of Greece as far as seems necessary to fill out the picture in the mind of the student.

German: (DR. SIEGFRIED BENIGNUS.) As these pupils are studying Greek history during this quarter, the work will therefore be the study of Athens under the administration of Pericles, illustrating the most prosperous time of Athens in political power, commerce, art, and literature, and the beginning of the Peloponnesian War. Only easy words and simple constructions with phrases will be used, so as to include suitable exercises in declension and conjugation of irregular verbs. The results of this historical study will be summarized by the pupils both verbally and in writing. In reading, Andersen's *Picture-Book Without Pictures* will be continued. The substance of the short stories after careful reading will be reproduced verbally by the pupils. As another means of strengthening oral expression, exercises in the language of every-day life will be conducted by having one pupil ask familiar questions, and another give the correct answer. The various German songs taught by the teacher of music have proved a welcome adjunct to the public performances of the school, such as Christmas and morning exercises They have also proved an effective means of correcting the defective pronunciation, especially of vowels. In February, Heinrich Heine's *Loreley* will be sung to the familiar melody of Friedrich Silcher. For memorizing, another poem of Heine's has been selected:

Du biſt wie eine Blume
So hold ,ſo ſchön und rein.
Ich ſchau' dich an, und Wehmut
Schleicht mir ins Herz hinein.

Mir iſt, als ob ich die Hände
Aufs Haupt dir legen ſollt',
Betend, daß Gott dich erhalte
So rein, ſo ſchön und hold.

Heinrich Heine,
„Buch der Lieder".

Physiography: (Wallace W. Atwood.) Ninth Grade — Shore Lines:

I. Observational work through study of maps, models, and pictures of the coasts of the Mediterranean Sea and other regions.

II. Classification of coast lines. Compare west coast of Italy, the Italian "foot," and coasts of Greece with northwest France, Belgium, and Holland.

III. Activities along shore lines.

1. Erosion, developing cliffs, caves, and terraces.

2. Transportation by waves, undertow, and littoral currents.

3. Deposition, developing terraces, beach ridges, barriers, bars, spits, hooks, loops, deltas, and dunes.

IV. Effects of depression. Study examples about Greece, west coast of Italy, Stockholm district, west Coasts of Scotland, and Norway, southern Sweden, Maine, and Puget Sound.

V. Effects of elevation. Study examples in Holland, Belgium, northwest France, Atlantic coastal plain of the United States, Texas, Mexico, Argentine Republic.

VI. Recognition of ancient shore lines by (1) cliffs, (2) terraces, (3) beach ridges, (4) deltas, (5) ramparts or bowlder walls, (6) fossils, (7) local water-worn gravels, (8) consistent horizontality of above features. Study examples about Chicago, Great Salt Lake, Utah, Lake Chelan, Washington.

VII. Settlement and development of civilizations along different coasts. Compare life of Greece with that of Egypt, of Phœnicia, of Holland, of the Atlantic coastal plains of the United States.

Art Expression: 1. Modeling in sand the Mediterranean region.

2. Modeling in chalk special coastal regions of Egypt, Greece, and Italy.

3. Painting with water-colors scenes typical of the Mediterranean region.

References: Davis, *Physical Geography;* Gulliver, *Shoreline Topography;* Geikie, *Elementary Lessons in Physical Geography;* Mill, *Realm of Nature.*

Mathematics: (George W. Myers.) Geometry. These grades will continue their studies of type forms used in architectural construction. The geometrical forms used in Greek architecture will be given special attention, though the work will not be confined exclusively to such forms. The necessary facility in the use of drawing instruments and in the principles of geometrical construction will be secured through the drawing to scale of simple mosaic patterns, Greek frets, frescoes, and windows, and in designing other ornamental parts of buildings, using both assigned and original fundamental figures. The special topics of study will be:

1. Greek arches. a. The segmental arch (Fig. 37). b. Pointed horseshoe arch (Fig. 43). c. The equilateral arch (Fig. 44).

2. Gothic arch (Fig. 52).

3. Roman arch (Fig. 41).

4. Greek frets and borders (Figs. 18 and 19).

5. Panel doors (Fig. 42).

6. Ornamental patterns (Figs. 47, 48, 49, 51, 56, 57 and 58).

7. Frescoes, mosaics, and mosaic borders (Figs. 21 to 36, 38 to 40, 45 and 54).

8. Designs from assigned fundamental forms (Figs. 1 to 12, excepting 2).

9. Ornamental windows (Figs. 13, 14, 15, 45, 46 and 52).

10. Original geometrical designs.

Some time will be spent during the succeeding months in the manual training shop in the construction of simple astronomical apparatus, such as the sun-dial, gnomon, quadrants, etc.

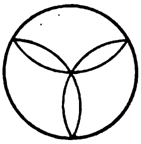
Eleventh and Twelfth Grades

General Geology: (Wallace W. Atwood.) Eleventh Grade.

XIII. Alleghany Plateaus.

1. Location and physiographic boundary.

2. Topography. Its erosion history.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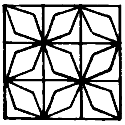
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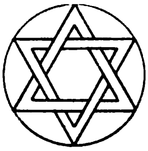
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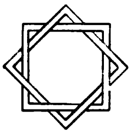
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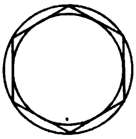
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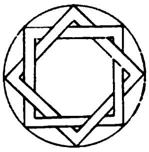
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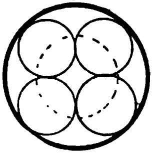
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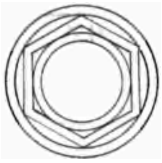
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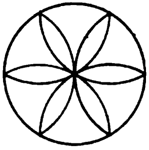
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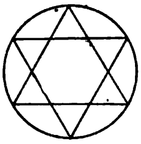
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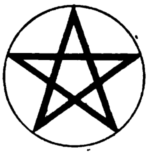
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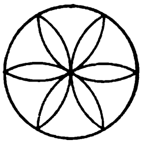
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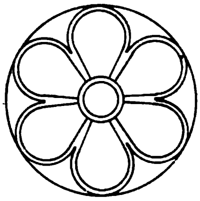
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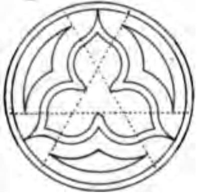
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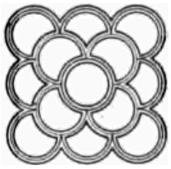
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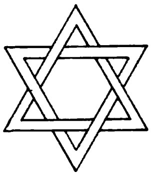
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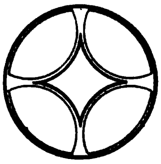
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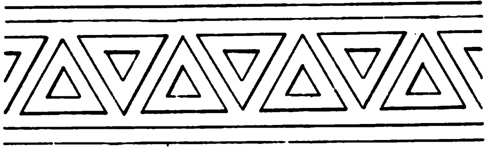
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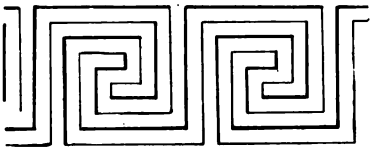
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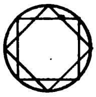
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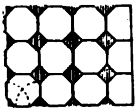
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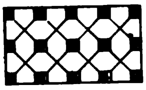
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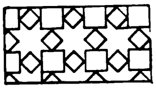
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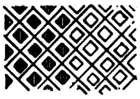
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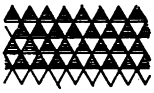
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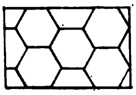
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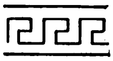
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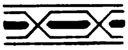
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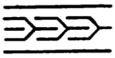
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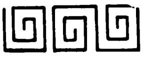
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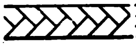
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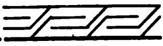
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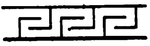
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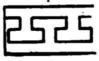
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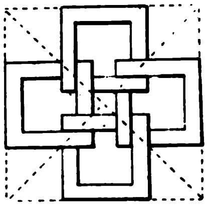
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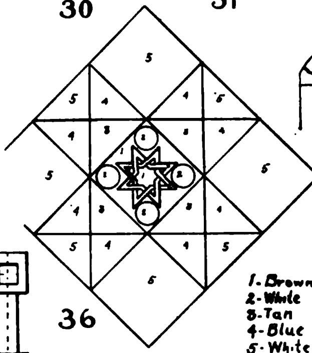
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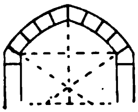
1. Brown
2. White
3. Tan
4. Blue
5. White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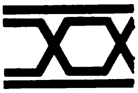
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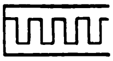
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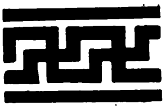
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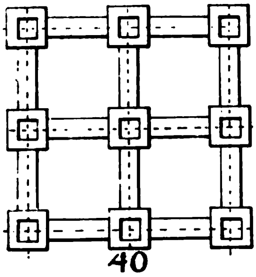
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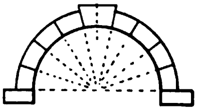
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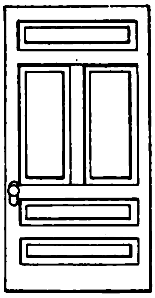
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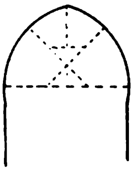
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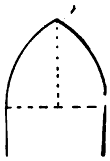
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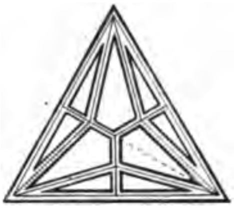
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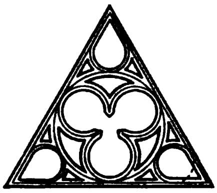
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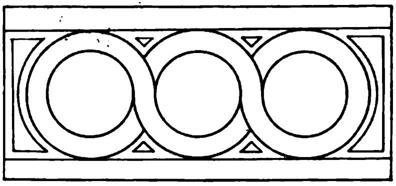
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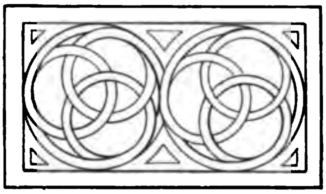
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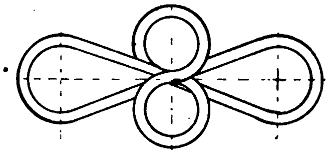
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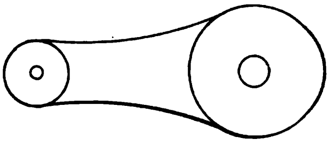
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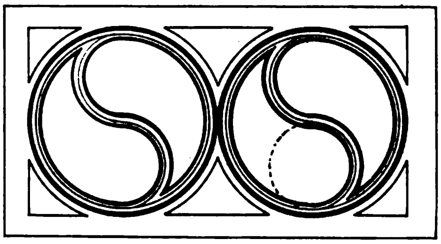
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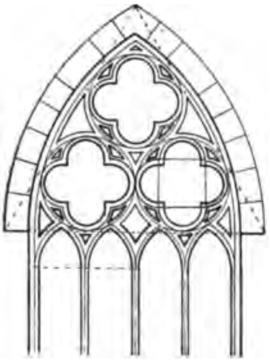
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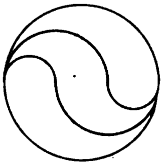
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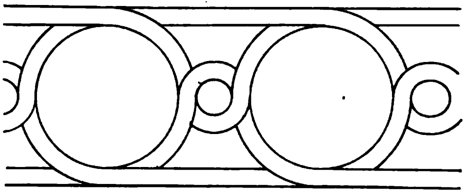
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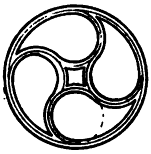
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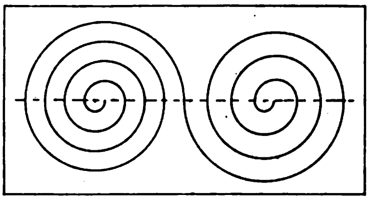
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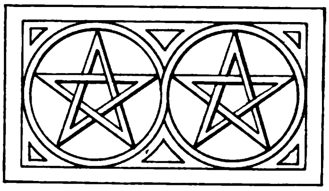
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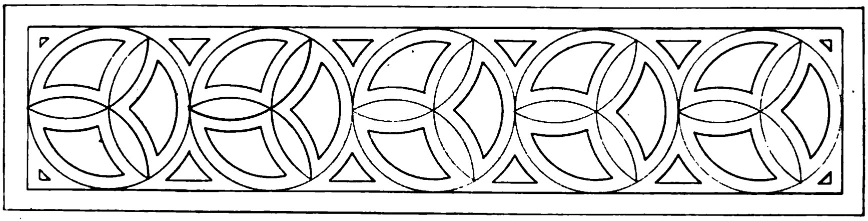
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3. Drainage.

4. Geological structure. The formations and the origin of their materials. Mineral wealth stored in these formations.

5. Settlement and development. (a) Migration into and through this belt. (b) Location of towns and villages. (c) Occupation of people to-day in the belt.

XIV. The Ozark Mountains. These will be treated in the same general manner as the Appalachians, or as the Alleghany plateaus.

XV. The prairies of the north central states.

1. Location and extent.

2. Geological formations underlying the region. (a) Origin of the material and nature of deposition. (b) Mineral wealth in these deposits. (c) The loose mantle of glacial drift. Its distribution, topography, topographic relations, constitution, structure, and origin.

3. The glaciers which brought the drift. (a) Formation and movement of. (b) Work of erosion, transportation, and deposition. (c) Erosion by glaciers. Influence on hills, on valleys, on rock surfaces. (d) Transportation by glaciers. How does a glacier get material? Where does it carry material? (e) Deposition by glaciers. Causes for deposition. Nature of deposition. (f) Depositional forms and how to recognize them in the field. The terminal moraine, ground moraines, outwash plains, kames, eskars, valley trains, and drumlins.

4. The glacial period. (a) The different epochs — how to prove them in the field. (b) Theories for explaining the ice age or glacial period.

5. Evidences of glacial periods in other countries and in other geological ages.

6. Settlement and development of the regions glaciated.

Art Expression: 1. Modeling in sand and chalk the areas under consideration.

2. Painting in water-colors typical scenes chosen from the regions studied.

References: Same as given in January number, together with physical, geological, and topographic maps.

Latin, Eleventh Grade: (ALLEN W. GOULD.) The students will continue the reading of Cicero's orations against Catiline, probably taking up the third and fourth this month in the way described in the January COURSE OF STUDY (p. 490), and with the references already given in the COURSE OF STUDY for October (p. 177), November (p. 225), and December (p. 317). We shall try to help the students to see that these orations really give us a glimpse of the Roman government in actual operation, so that they can understand how necessary it was for the executive to have public opinion to back him, both in the Senate and among the populace, — unless he would rule by force alone, — and how difficult it was thus to educate public opinion as the Roman Empire grew larger and its citizenship less homogeneous.

In this way the student will see why Cicero was banished, because he had not been able to carry public opinion with him, and why Cæsar prevailed, because he gave up the attempt to have the people educate themselves. Then the pupils will be ready to ask themselves which of these two forms of governments is absolutely indispensable, if men are to rule themselves; and which of them was possible in Cæsar's time.

Chemistry: (ALICE P. NORTON.) In order to make the work more tangible, and the substances investigated more real, considerable time has been taken during the last month in discussing the relation of the different gases of the atmosphere to the life of the plant. One exercise was spent, under the direction of the biology teacher, in the study of the structure of the leaf, with the aid of the microscope. The function of the plant as a purifier of the air has been emphasized, and attention called to the wonderful economy of nature, by which the waste products of animal life are utilized in the vegetable world, and prepared for the further use of man.

In connection with the study of the composition of the air, the test for carbon dioxide has been made in the rooms of the school building. The following simple method, which gives fair results, especially when the air is bad, was employed for this:

Procure bottles of the given sizes: 16-ounce, 10-ounce, 8-ounce, 6-ounce, and 4-ounce. Using a common hand syringe, pump into each the air to be tested till the bottles are filled. Add to each one-half ounce of lime-water (one tablespoonful), cork, and shake thoroughly. After five minutes examine, comparing carefully the turpidity of the lime-water in the different bottles. In sixteen ounces of air, of ordinary purity (four parts of CO_2 in 10,000), there will be enough CO_2 to render the lime-water milky. It will not become milky in the 10-ounce bottle unless there are 6 parts of CO_2 in 10,000. The following table, from Tracy, shows the amounts indicated:

SIZE OF BOTTLE.	AMOUNT OF LIME-WATER.	PARTS IN 10,000.
16-ounce.	½ ounce.	A little less than 4
10-ounce.	½ ounce.	A little more than 6
8-ounce.	½ ounce.	About 8
6-ounce.	½ ounce.	A little more than 10
4-ounce.	½ ounce.	A little more than 15

It is necessary of course to warn the pupil that the serious contamination of the air is not from the carbon dioxide, but that it is used as a convenient measure of the impurity.

Experiments have from time to time been assigned to individual pupils, who, after performing the work, have reported the results to the class as a whole. This has given practice in making clear, definite, intelligible statements, and has cultivated self-reliance. The subject of combustion was studied in this way, with the additional advantage that the class have been able to proceed more rapidly than they otherwise would.

In the January number it was stated that the best opportunity would be sought for the introduction of the conceptions of acid, base, salt. The question as to where the hydrogen came from, when it was prepared from sulphuric acid and zinc, led to the repetition of the experiment, using hydrochloric instead of sulphuric acid, and then to an examination of the symbols of the acids on the reagent bottles, with a consequent discussion of the meaning of acid.

After sodium was discovered in the ash of the leaf, the following experiment was performed by the teacher, and sodium hydrate was discussed as a typical base:

Make a small cylinder of wire gauze, twist fine wire about it, and close one end firmly. In it place a piece of metallic sodium as large as a pea, and close the open end as before. Attach the wire gauze cage firmly to the end of a piece of stout iron wire, and thrust it quickly into a water pan so that it will come directly under the mouth of a small bottle of not over 100 c. c. capacity, which has been previously filled with water and is held inverted in the pan. With a lighted match test the gas collected.

Some of the more rapid workers in the class will perform the following experiment to illustrate the formation of a salt:

Record carefully the readings of two burettes, containing respectively sodium hydrate solution and hydrochloric acid. Run out 20 c. c. of the hydrate into an evaporator. Add three drops of litmus solution. From the other burette add acid until the litmus changes to pink. Add from each burette until a point is reached where one drop from either will turn the solution blue or pink. The solution must finally be left pink. Again record the burette readings. Calculate how much hydrochloric acid is required to neutralize 1 c. c. of sodium hydrate.

Now take 5 c. c. of the hydrate. Add three drops of the litmus, as before. Calculate the amount of acid necessary to neutralize this amount and run in the calculated amount from the acid burette. This will test the accuracy of your former work.

To 25 c. c. of sodium hydrate in an evaporator add the amount of acid necessary to neutralize it completely and evaporate to dryness. Taste the residue.

Because of the introduction of the experiments here given, most of the work outlined for January will be done in February. If more time remains, it will be used in further discussion of these same subjects rather than in the introduction of new ones.

Some of the questions which will be used in written work are as follows:

1. On a certain railroad a tunnel lined with wood took fire from a spark from the locomotive. It was impossible to reach the flames with a hose. The authorities ordered the ends of the tunnel to be bricked up. Discuss whether this method should have been effective.

2. Given a bottle full of colorless gas. Upon testing it with a lighted wooden splinter the gas was found to support combustion. Lime-water was now added and turned milky. What was the original gas?

4. Why does blowing a flame sometimes put it out and sometimes make it burn more brightly?

4. Why does carbon dioxide often collect at the bottom of old wells, while in an ordinary room it is found distributed, or near the top? Give all the reasons.

Mathematics, 11th and 12th Grades: (GEORGE W. MYERS.) I. Applied Trigonometry. Plane trigonometry will be reviewed during February through a study of the stresses and strains in roof trusses, girders, cranes, and derricks.

The following topics will receive special attention:

1. Various forms of the simple crane (Figs. 1 to 3).
2. The derrick (Fig. 4).
3. Braces and tie-rods (Fig. 5).
4. The king-post truss (Fig. 6).
5. The inverted king-post truss (Fig. 7).
6. The queen-post truss (Fig. 8).
7. The inverted queen-post truss (Fig. 9).
8. The Burr truss (Fig. 10).
9. The Pratt truss (Fig. 11).
10. The Howe truss (Fig. 12).
11. The Warren girder (Fig. 13).

II. Field-work in plane surveying will be taken up as soon as the weather permits and

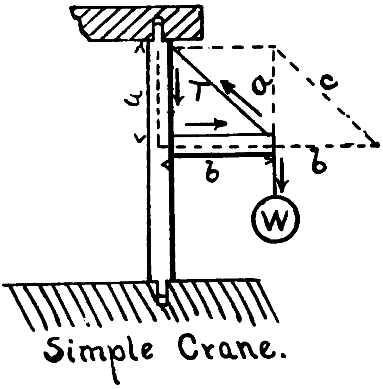


Fig. 1.

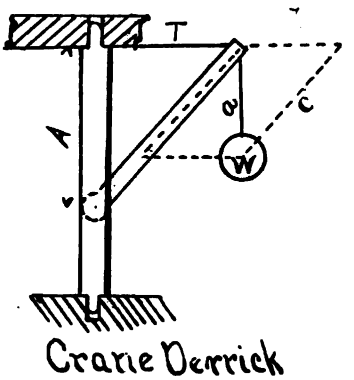


Fig. 2.

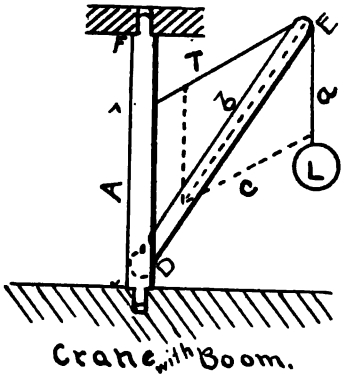


Fig. 3.

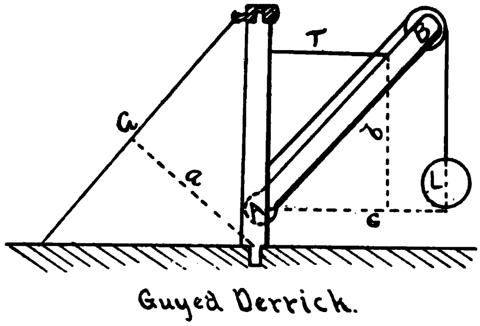


Fig. 4.

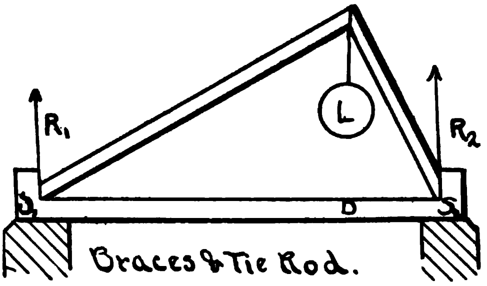
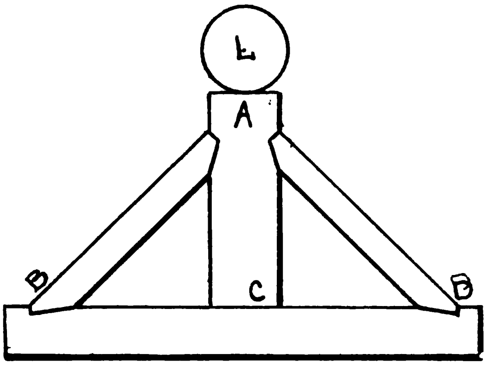
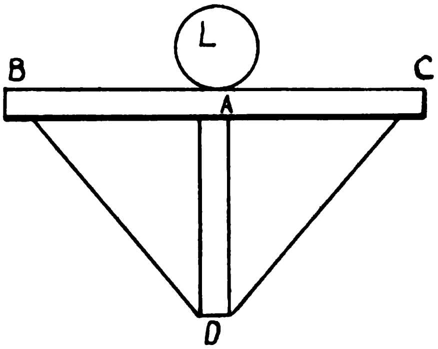


Fig. 5.



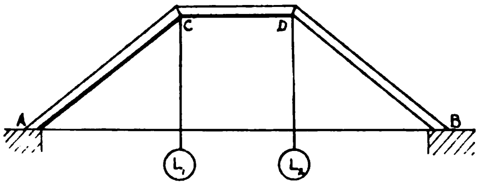
King Post Truss.

Fig. 6.



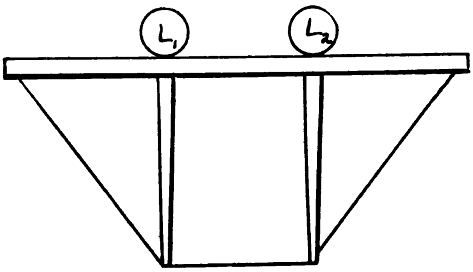
Inverted King Post Truss

Fig. 7.



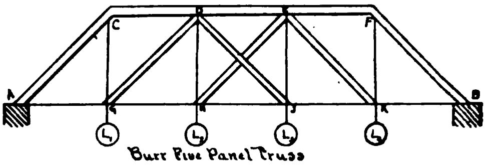
Queen Post Truss

Fig. 8.



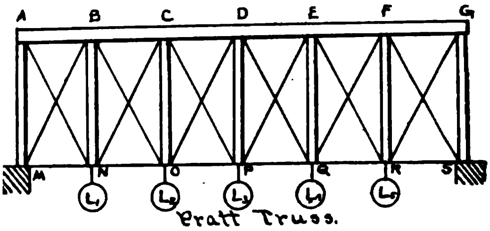
Inverted Queen Post Truss

Fig. 9.



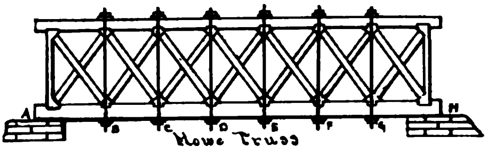
Burr Five Panel Truss

Fig. 10.



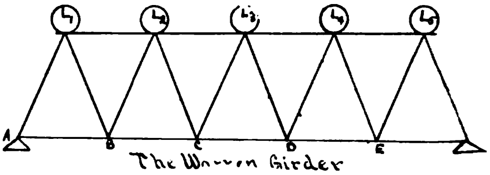
Pratt Truss.

Fig. 11.



Howe Truss

Fig. 12.



The Warren Girder

Fig. 13.

the subject of spherical trigonometry will be introduced through an examination into the instruments and methods used in our coast and geodetic surveys for running boundaries, mapping rivers, coast-lines, etc., where the curvature of the earth must be considered and allowed for.

III. The class will also begin plotting the graphs of the trigonometric functions. The equations to be plotted will be:

1. $y=\sin x$. 2. $y=\cos x$. 3. $y=\tan x$. 4. $y=\cot x$. 5. $y=\sec x$. 6. $y=\csc x$. 7. $y=\text{vers } x$. 8. $y=\text{covers } x$.

Twelfth Grade

History: (EMILY J. RICE.)

SUBJECT—The Critical Period of our History.

This is the period that shows to the best advantage the value of the union of the separate States into one strong nation.

We shall begin with a discussion of the possible methods of political organization and review the history of federal leagues in the past, and also the history of representative government in England and in the American colonies. This will show, by comparison, the nature of the English principle of government and the struggle between nationalism and particularism in a federal system. By considering the condition of the States under the Articles of Confederation, the pupils may be led to see the necessity for union, and may discover what each State must yield in order to make a union possible. It may be well to organize the class as the Federal Convention, with the pupils as representatives from the States. In this way each pupil will try to contribute the arguments that were made in some one of the different sections of the country for and against the Constitution, and in order to present these arguments he will find it necessary to consult various sources of information. He will need to understand the conditions of labor and trade in his particular section, the size of his State compared with that of other States, and the extent of the entire country with its relation to other countries. It will be necessary to know the feeling of the sections in regard to each other, and consequently to consider the modes of travel of the time and difficulties of communication. The recent troubles that had been caused by laws in regard to commerce with foreign nations, different trade laws between States, different kinds of money, and unsettled boundaries of States, are important because they taught the people the weakness of the general government and the consequent peril of the country.

After having studied the formation of our national government, the students may consider how they are being governed in the schoolroom, how much of their discipline is imposed upon them by some central authority, and how much of it is in their own hands. Possibly their interest in the analysis of this problem will aid them in managing their own schoolroom affairs. If they undertake to do this, some form of government must be selected. Constant comparisons may then be made between the forms selected by the pupils and those established in our local and national governments. A study of the Constitution of the United States will follow.

The study of United States history will be used throughout the year, as far as possible, to help the children in the solution of problems arising in their own actual experience. Important current events should be considered, especially those which refer to the industrial and political affairs of our own city and country.

Books of Reference: Fiske, *Critical Period of Our History;* McMaster, *History of the United States*, v. 1; Schouler, *History of the United States*, v. 1; Frothingham, *Rise of the Republic; The Federalist;* Hart, *Formation of the Union; Statesmen Series: Hamilton, Madison, Washington; American History Leaflets; Old South Leaflets;* Hart, *Source Book* and *American History Told by Contemporaries.*

German: (DR. SIEGFRIED BENIGNUS.) The recitations in literature of the advanced High School pupils have shown a deficient knowledge of versification. Only he who is familiar with the poetic form is able fully to understand the beauty of poetry, and to follow the innermost emotions of the poet. German genius has found high expression through rich and varied poetry clothed in the manifold native meters as well as in those of the cognate English, and in a characteristically flexible adaptation to all possible external forms in the simplest and most intricate structure of versification of the other civilized nations, such as the Greeks and Romans, the French, Italians, Spaniards, and even the non-Europeans. The art of German versification gives excellent opportunity for observing the interrelations of German with English literature, and with the literatures of all other nations. To insert detailed outlines in the COURSE OF STUDY would require too much space. They will, therefore, be printed separately.

In the study of literature since October, the work on Schiller has been completed. So far as possible until the end of the school year, the pupils will be familiarized with the prominent writers of poetry and fiction as well as of scientific prose from the time of Schiller to the present day. The phases of the study to be pursued by the class are these:

I. Classic and Romantic School (1748–1848.)
(1) Independent contemporaries of the Classics.
(2) The Romantic School.
(3) The Earlier Romanticists.
(4) The poets of the Napoleonic War Period.
(5) The Suabian Circle of poets.
(6) Other Lyric poets allied with the Romanticists.
(7) The Drama since Schiller's death up to the thirties.
(8) The forerunners of Realistic poetry.
(9) The Newer Germany; political poets.
(10) The Later Romanticists of the forties.
(11) The scientific prose of the Romantic epoch.
II. Modern poetry; transition to and struggle for new ideals (since 1848).
(1) Different suppositions and principles in literature.
(2) Transitions from classic-romantic to modern poetry.
(3) The poetic Realism; modern poets.
(4) German literature since 1870.
(5) The scientific prose since 1848.

February will be taken up with the contemporaries of Göthe and Schiller: Johann Peter Hebel, Jean Paul, Friedrich Hölderlin, Friedrich von Matthison, Johann Gottfried Seume, August Wilhelm Iffland, August Kotzebue, Immanuel Kant, Wilhelm and Alexander von Humboldt, Georg Forster, Karl Ritter, Johannes von Müller, Christian Gottlob Heyne, Friedrich August Wolf; and the views of the romanticists and their contributions to the spiritual life in Germany. The reading matter will be taken from these writers.

To correlate with the special subject of the High School during February, the War of Independence will be studied, illustrating (1) cause, (2) important generals and battles, (3) attitude of the European powers, (4) results. The pupils will report on the matter in writing and verbally, thus furnishing opportunity for correcting mistakes in grammar.

For memorizing, the poem "Möven," in free rhythm, has been selected.

Möven.

Schwebend, kreiſend eilt ihr Möven
Stetig hinterm Schiffe her.
Weit vom Lande es begleitend,
Fern vom Lande es begrüßend,
Seid ihr ſtets willkomm'ne Gäſte,
Die der Wand'rer freudig ſchauet,
Weiße Möven, Meerbegleiter!

Schwebend, kreiſend eilt ihr Möven
Stetig hinterm Schiffe her.
Morgens, wenn die Sonne ſteiget,
Seid ihr da. Wie Lichtgeſandte
Schwebt ihr in der Ätherhöhe.
Wiederum im Abendleuchten
Eilt ihr, wo des Horizontes
Strich die dunklen Waſſer ſcheidet
Von der Flammenglut des Himmels,
Segelt eilig hin und ſchwindet —
Dunkelſchatt'ge Abendvögel,
Leichtbeſchwingte Abendgeiſter,
Die der Ruh' entgegeneilen,
Ruh' auf felſ'gem Küſtenſtrand.

Weiße Möven, ſchöne Segler,
Seid ihr freundliche Gedanken,
Die die Lieben nach uns ſandten
In verkörperten Geſtalten?
Seid ihr freundliche Gedanken,
Welche uns entgegeneilen,
Schwingen breiten, Arme breiten
Aus dem Lande unſ'rer Zukunft,
Aus dem Lande unſ'rer Hoffnung,
Aus dem Land Amerika?

Wilhelm Benignus,
Aus Copyright „Meerlieder".

References for the study of Schiller begun in October: Schiller's life and works (only a few of the most important can be given here). Wychgram, Schiller, 1895 (numerous authentical illustrations); Deutſche Verlags-

Anſtalt, Schillers Werke, illustrated by the best German artists; J. Minor, Schiller, ſein Leben und ſeine Werke, 1890; Otto Lyon, Schillers Leben und Werke, 1890; Otto Brahm, Schiller, 1888; C. Hepp, Schillers Leben und Dichten, 1885; Heinrich Düntzer, Schillers Leben, 1881; August Spiess, Schillers Leben und Dichtungen; Emil Palleske, Schillers Leben und Werke, 1858, especially new edition 1891; Gustav Schwab, Schillers Leben, 1840; Karl Hoffmeister, Schillers Leben, Geiſtesentwickelung und Werke im Zuſammenhang, 1838—42; revised edition by Heinrich Viehoff, 1888; Karoline von Wolzogen, Schillers Leben, compiled from the recollection of the family, his own letters, and the communication of his friend Christian Gottfried Körner; Hermann Kurz, Schillers Heimatjahre (a novel containing poetry and truth); Moritz Zille, Schillerhalle, 1870, best thoughts from Schiller's works and letters, alphabetically arranged; Ludwig Rudolph and Karl Goldbeck, Schillerlexikon, 1869; H. Viehoff, Schillers Gedichte erläutert und auf ihre Quellen zurückgeführt, 6th edition, 1887; H. Düntzer, Schillers Gedichte erläutert, 3rd edition, 1888—91. A copious catalogue of the Schiller literature to present time gives M. Koch in vol. V of the second edition of Gödekes Grundriß. Carlyle, *Life of Schiller*, an examination of his works, 1825; E. L. Bulwer, *Life of Schiller* (introduction to the translation of Schiller's poems); Sime, *Life of Schiller;* English edition of Schiller's works (selection) by Morrison, Coleridge, Bulwer, Churchill and others (Philadelphia); Poems by Edgar Bowring, Bulwer, Merivale, Swanwick, Wireman (Philadelphia); selections by Turner and Morshead. and Vernon; *Song of the Bell*, by Arnold Forster (Bradford); Wallenſtein, by Coleridge, Lockhart; Maria Stuart, Jungfrau von Orleans and Tell by Pearson.

Music: (HELEN GOODRICH.) The High School is working upon three-part rounds, canons, and hymns, and will this month take up some more difficult part-songs. The basses have special drill once a week. The work of the class is directed chiefly toward improving the singing in morning exercises.

High School and Ensemble Songs: *Flag Song*, February COURSE OF STUDY; *Hail Columbia*, Modern Music Series, Second and Third Books; *Fatherland's Psalm*, Grieg, Seven Children's Songs (Augener & Co.); *The King of Love*, Songs of Life and Nature; *Little Rosebud*, Nursery Rhymes, Brahms (Augener & Co. Reprinted in Silver Song Series, No. 2, Silver, Burdett & Co.): *The Hardy Norseman*, Modern Music Series, Third Book; *Morning and Night*, Songs of Life and Nature.

Morning Exercises

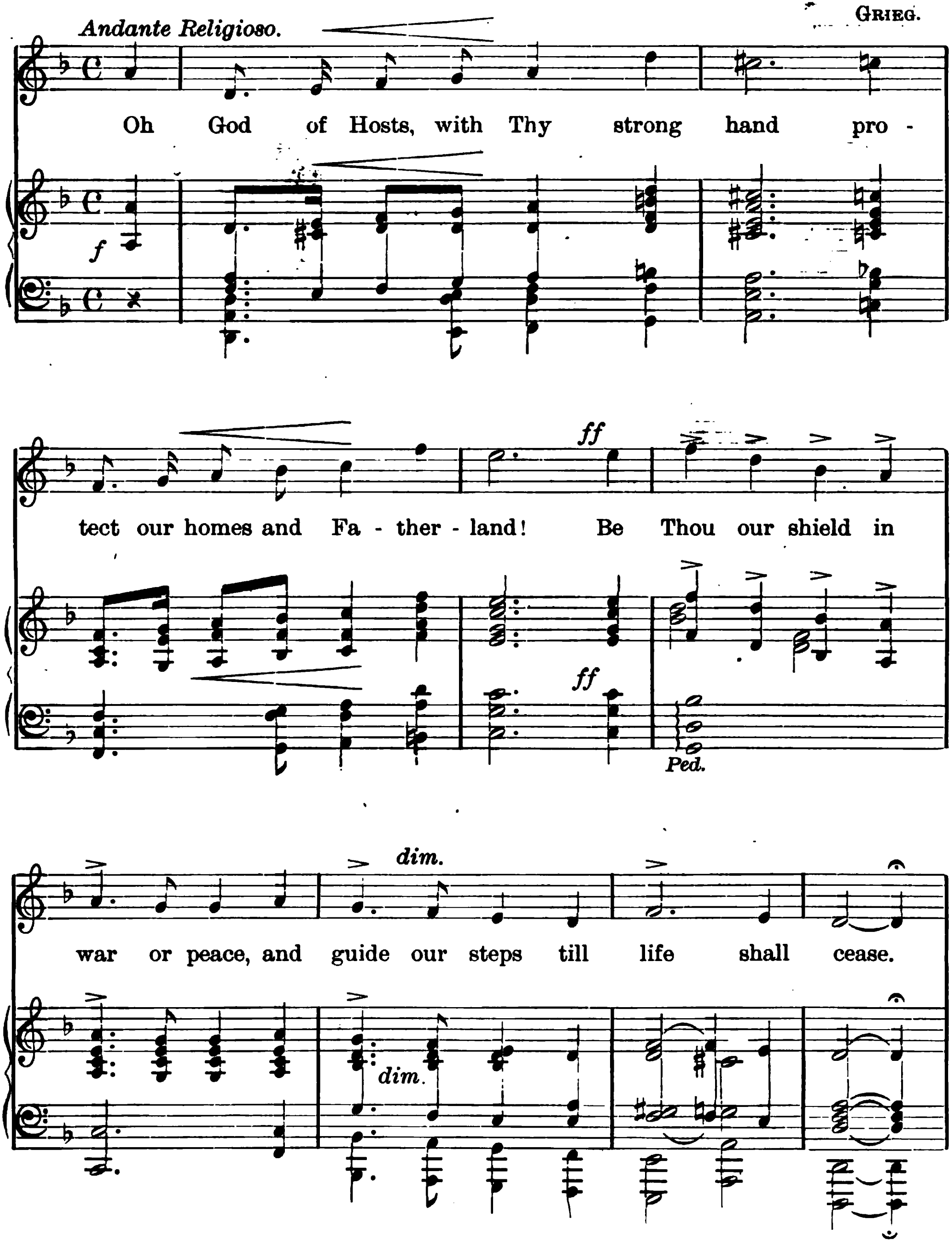
FEBRUARY	SUBJECT	LEADER
1.	Preservation of Foods	Mrs. Norton.
5.	What the Books Say	Miss Warren.
6.	Book Illustration	Miss Simpson.
7.	Primary Music	Miss Allen.
8.	Alice Cary	Miss Van Hoesen.
13.	Lincoln	Miss Rice.
14.	Valentine's Day	Miss Mitchell.
15.	Mother Goose	High School.
19.	Current Events	Miss Baber.
20.	Lowell	Mrs. Thompson.
21.	Washington	Mrs. Atwood.
26.	Star Land	Mr. G. W. Myers.
27.	Longfellow	Mr. Gould.
28.	Music of Different Nations	Miss Payne.

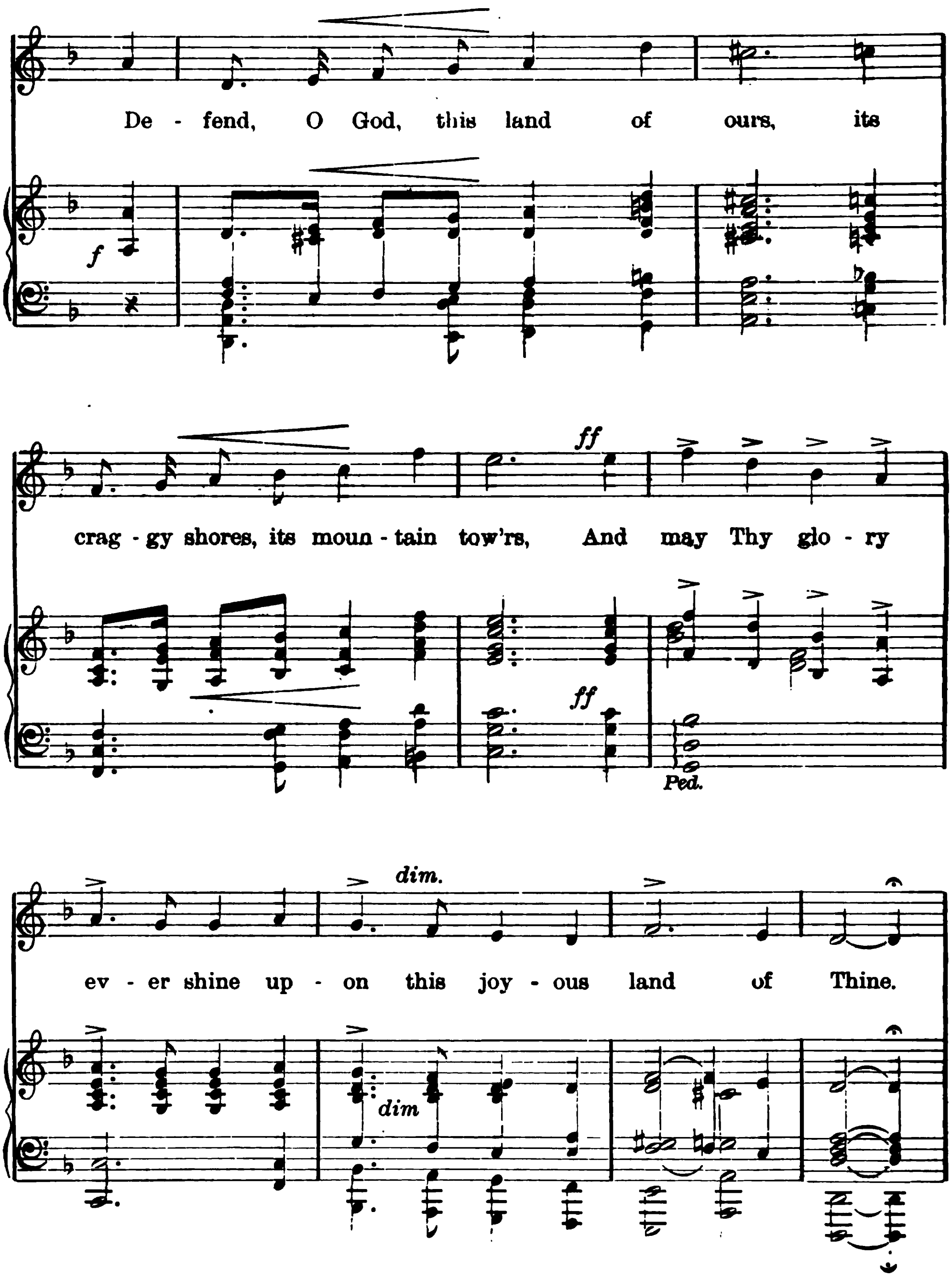
Historical Events and Birthdays

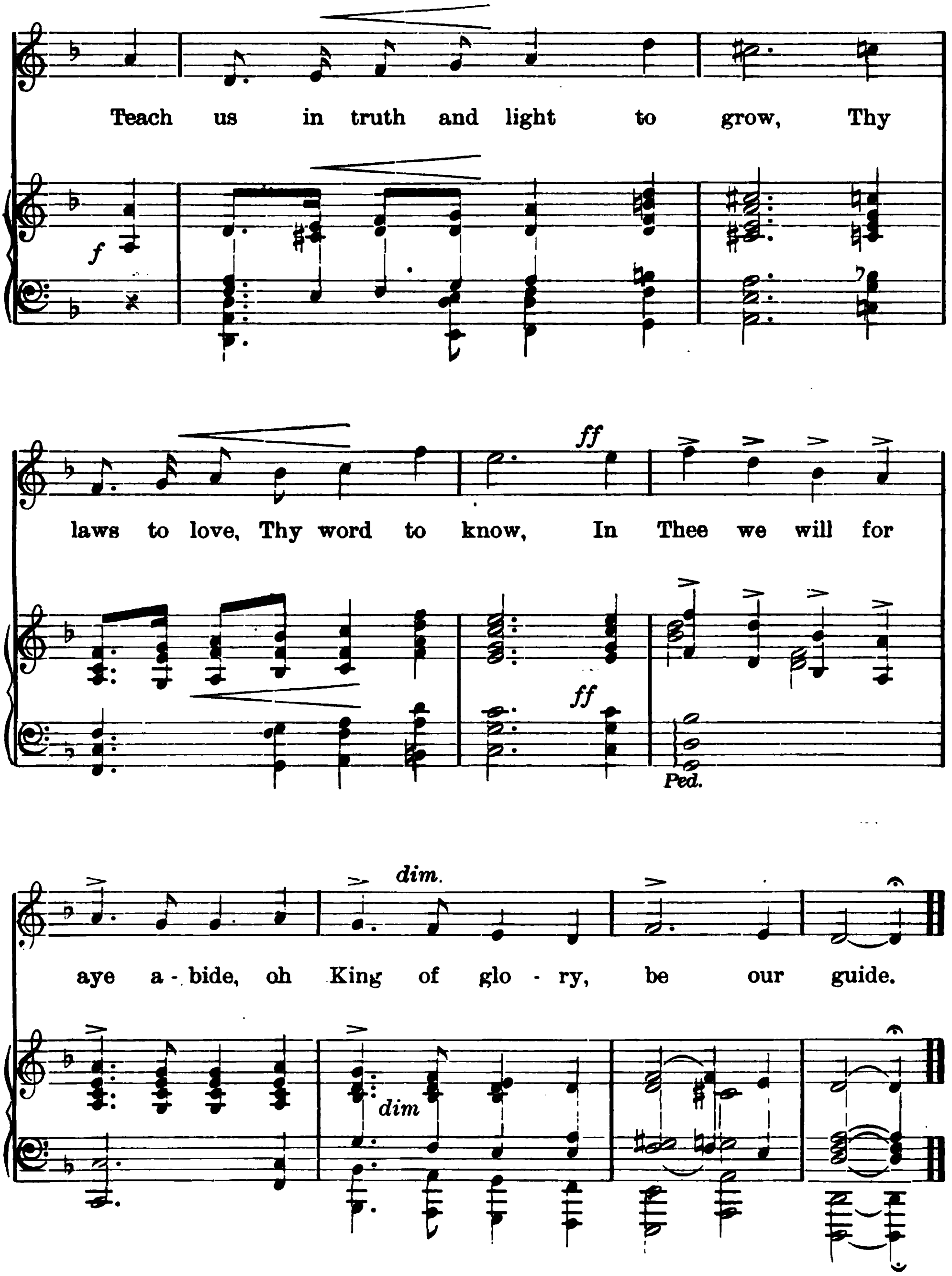
February	3	Felix Mendelssohn	1729
"	7	Charles Dickens	1812
"	10	Treaty of Paris Closed French and Indian War	1763
"	12	Abraham Lincoln	1809
"	12	Chas. Darwin	1809
"	12	Alice Cary	1820
"	15	Galileo	1564
"	18	Charles Lamb	1775
"	19	Copernicus	1473
"	22	George Washington	1759
"	22	James Russell Lowell	1819
"	22	Florida Ceded to U. S. by Spain	1819
"	23	George Friedrich Handel	1684
"	24	Robert Fulton	1765
"	26	Victor Hugo	1802
"	27	Henry Wadsworth Longfellow	1807

Fatherland's Psalm

GRIEG.

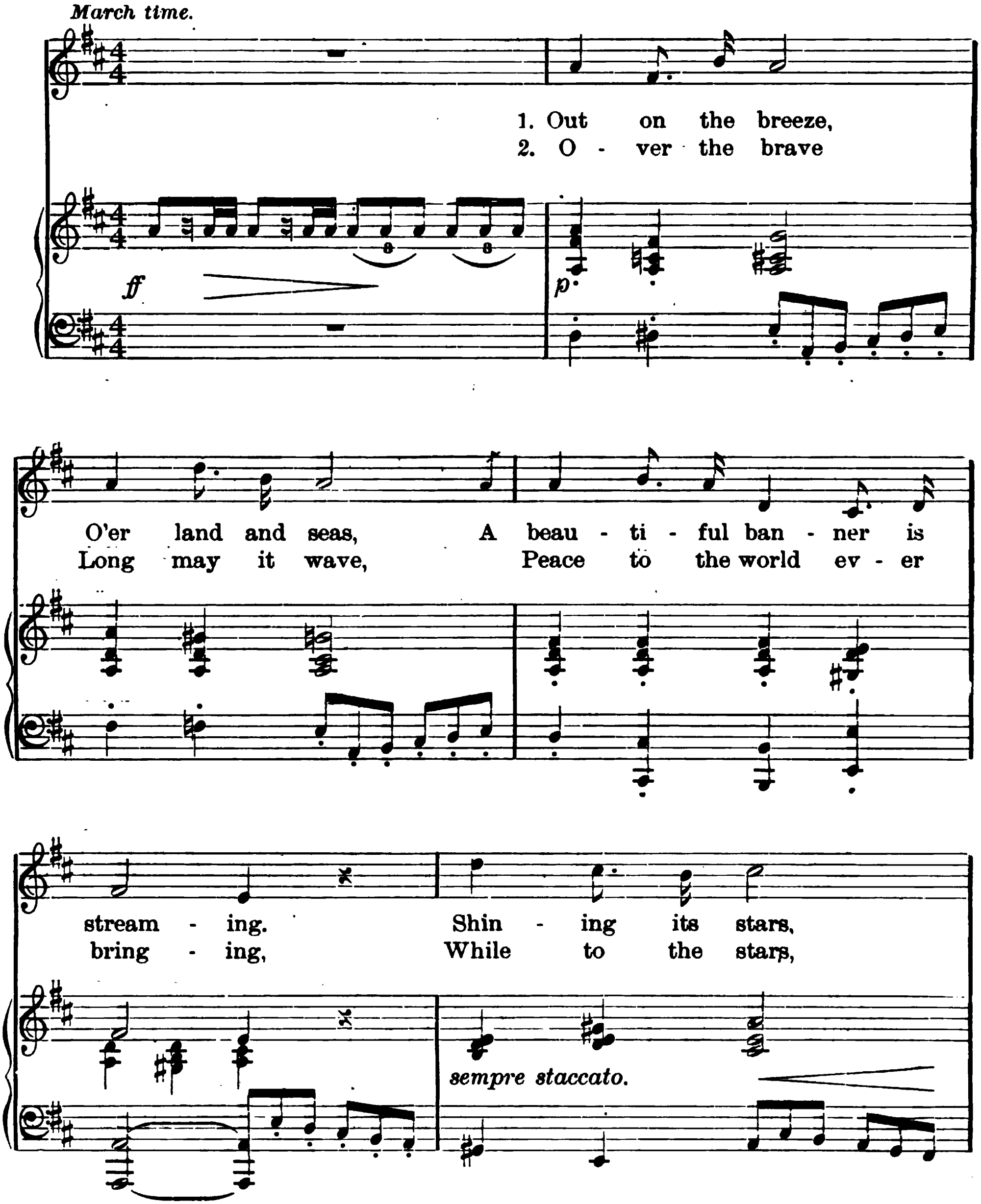

Andante Religioso.
Oh God of Hosts, with Thy strong hand pro - tect our homes and Fa - ther - land! Be Thou our shield in war or peace, and guide our steps till life shall cease.
f
ff
Ped.
dim.


De - fend, O God, this land of ours, its
f
crag - gy shores, its moun - tain tow'rs, And may Thy glo - ry
ff
ff
Ped.
ev - er shine up - on this joy - ous land of Thine.
dim.
dim


Teach us in truth and light to grow, Thy
f
laws to love, Thy word to know, In Thee we will for
ff
ff
Ped.
aye a - bide, oh King of glo - ry, be our guide.
dim.
dim

Flag Song*

Lydia Avery Coonley. **Frederic W. Root.**


March time.
1. Out on the breeze,
2. O - ver the brave
ff
p
O'er land and seas, A beau - ti - ful ban - ner is
Long may it wave, Peace to the world ev - er
stream - ing. Shin - ing its stars,
bring - ing, While to the stars,
sempre staccato.

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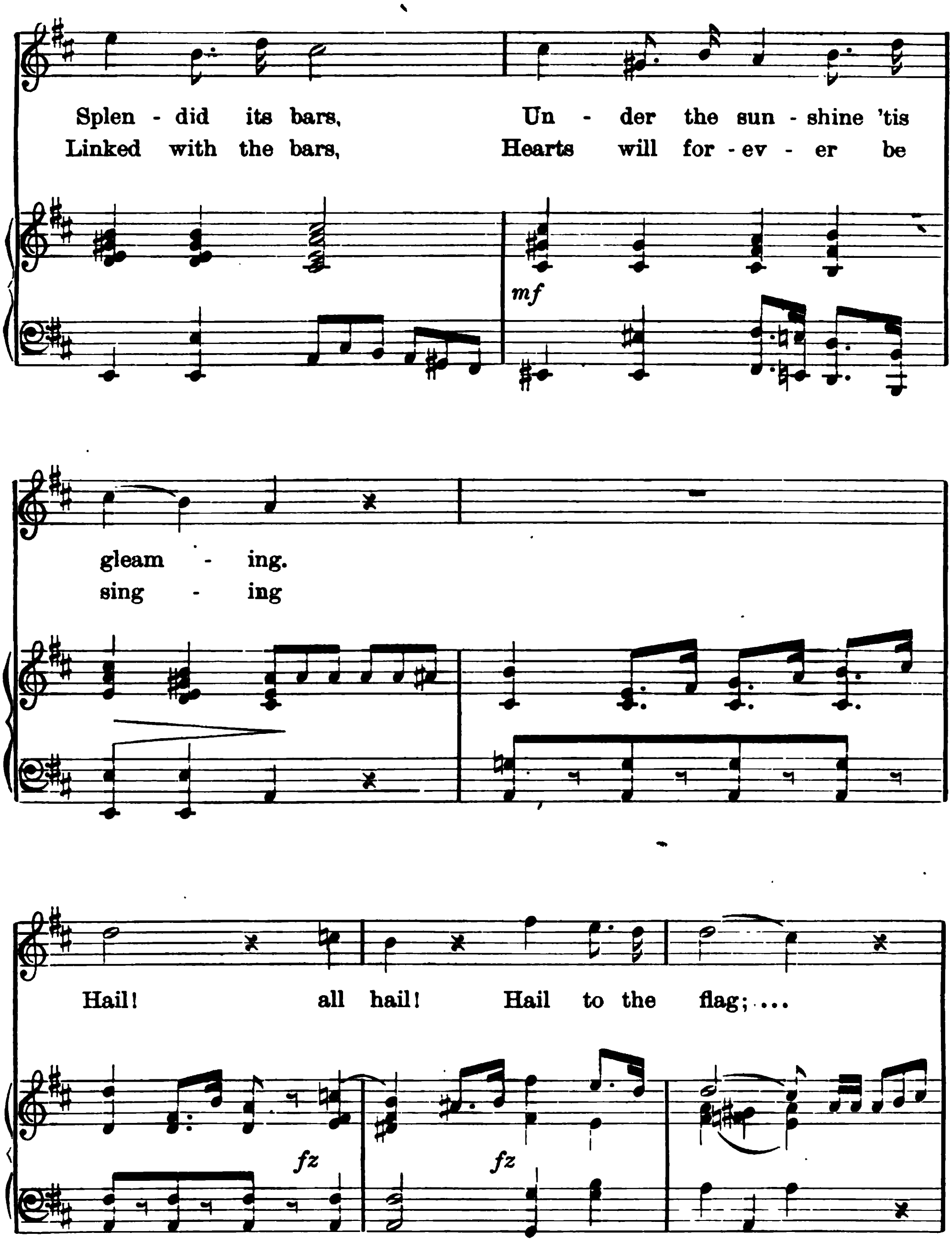
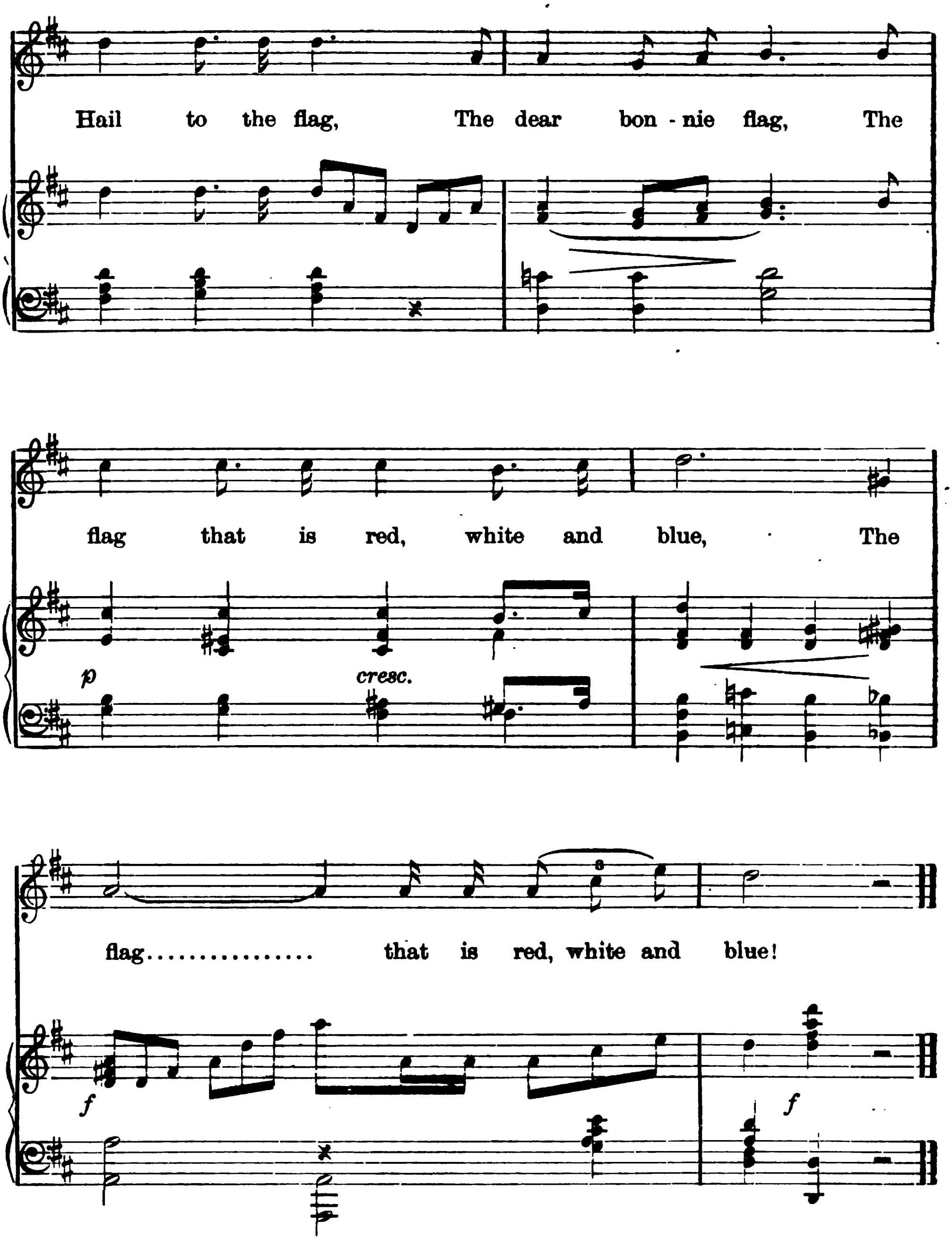
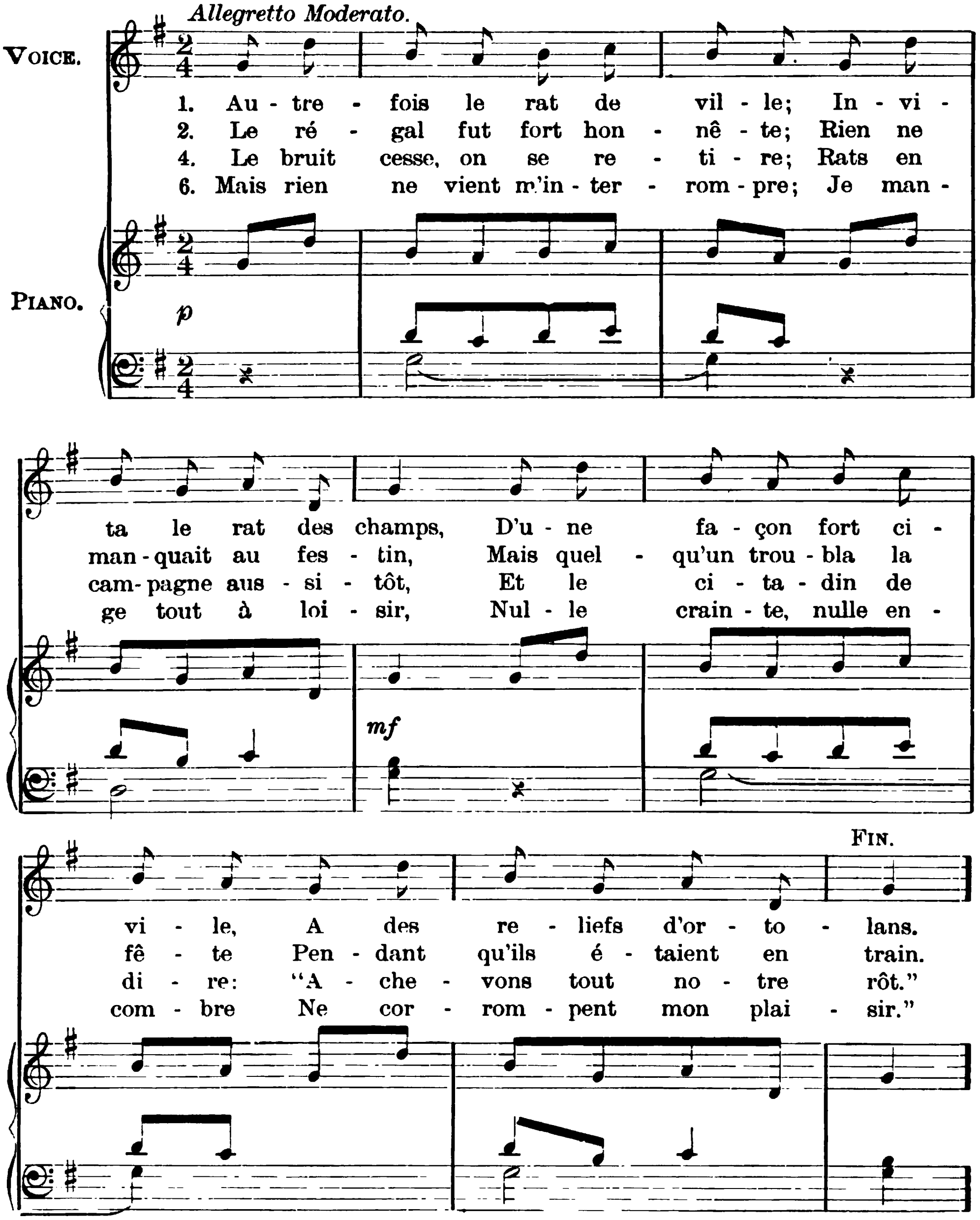
*From "Singing Verses for Children", by permission.


Splen - did its bars, Un - der the sun - shine 'tis
Linked with the bars, Hearts will for - ev - er be
mf
gleam - ing.
sing - ing
Hail! all hail! Hail to the flag; ...
fz
fz

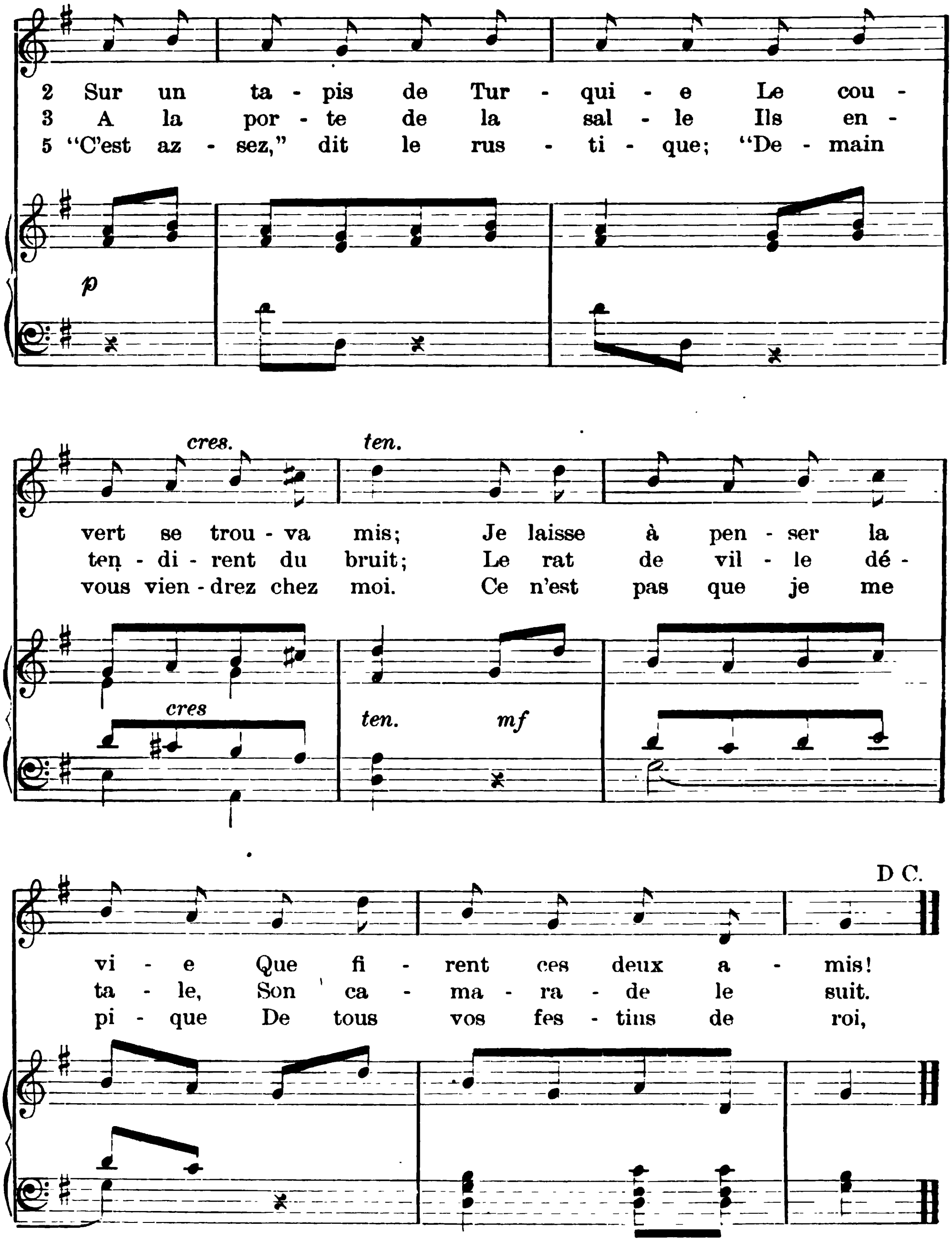

Hail to the flag, The dear bon - nie flag, The
flag that is red, white and blue, The
p
cresc.
flag................ that is red, white and blue!
f
f

Autrefois le Rat de Ville *

LA FONTAINE.


Allegretto Moderato.
VOICE.
PIANO.
1. Au - tre - fois le rat de vil - le; In - vi -
2. Le ré - gal fut fort hon - nê - te; Rien ne
4. Le bruit cesse, on se re - ti - re; Rats en
6. Mais rien ne vient m'in - ter - rom - pre; Je man -
ta le rat des champs, D'u - ne fa - çon fort ci -
man - quait au fes - tin, Mais quel - qu'un trou - bla la
cam- pagne aus - si - tôt, Et le ci - ta - din de
ge tout à loi - sir, Nul - le crain - te, nulle en -
vi - le, A des re - liefs d'or - to - lans.
fê - te Pen - dant qu'ils é - taient en train.
di - re: "A - che - vons tout no - tre rôt."
com - bre Ne cor - rom - pent mon plai - sir."
p
mf
FIN.

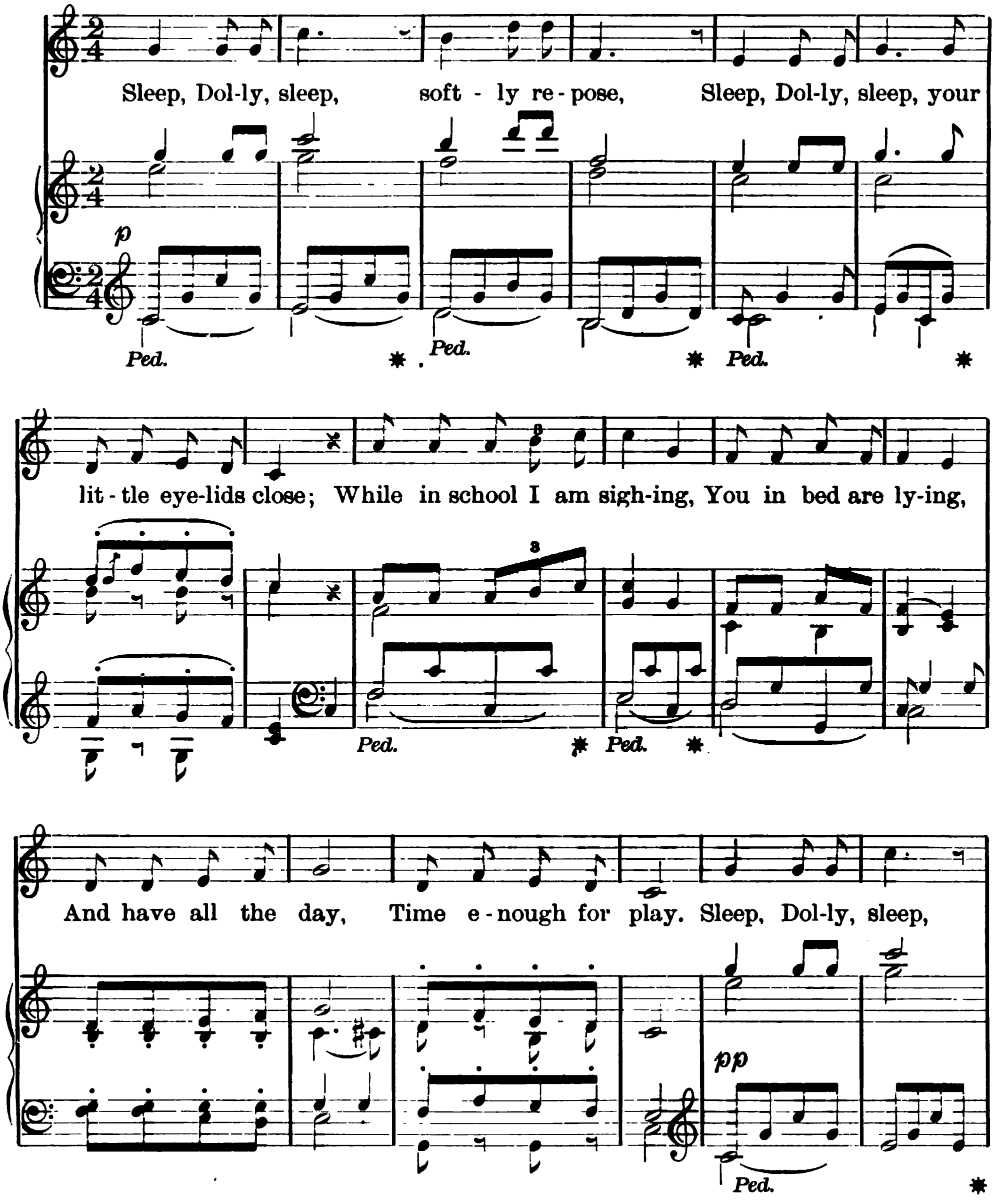
*From "Chansons, Poésies et Jeux Français" by Agnes Godfrey Gay.

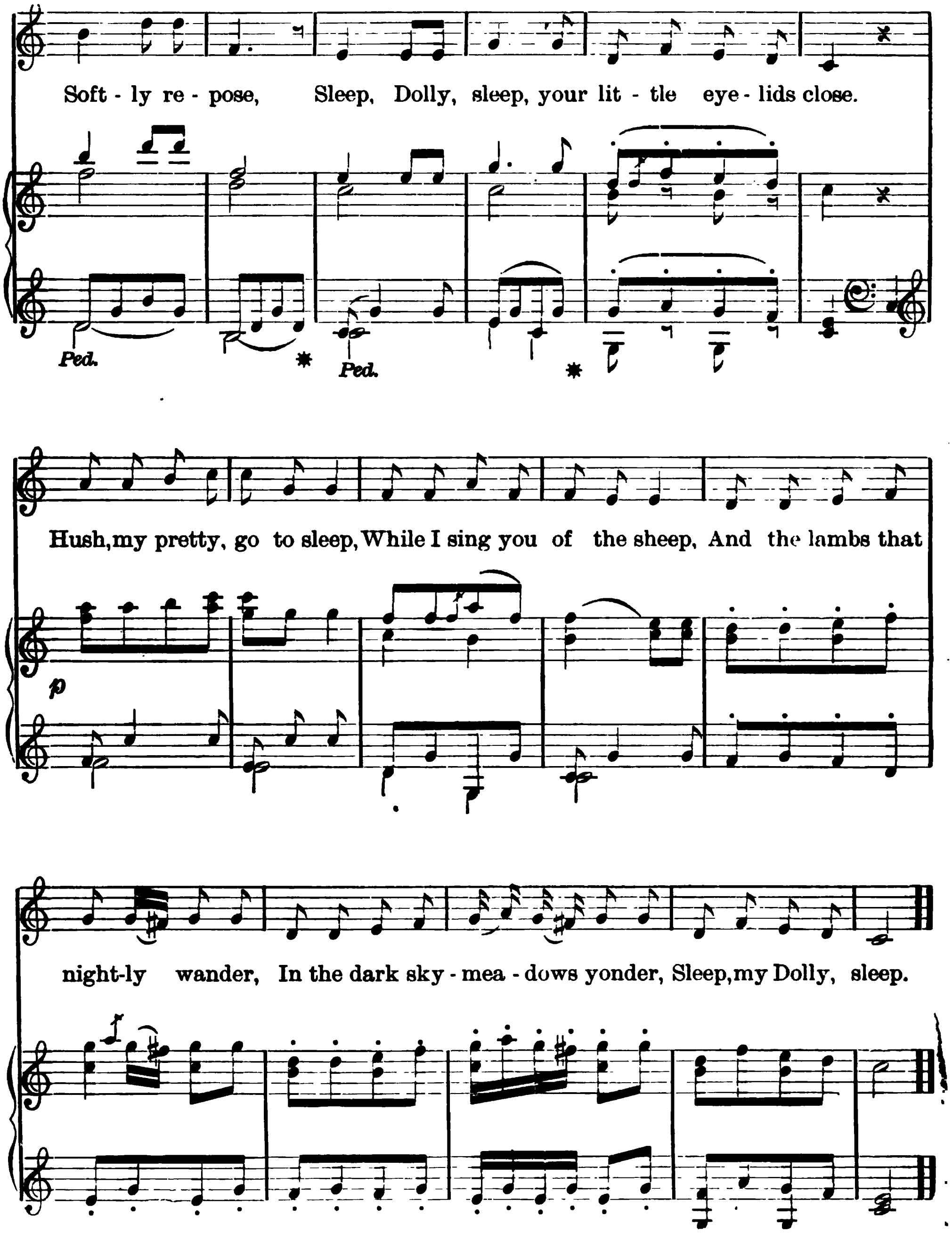

2 Sur un ta - pis de Tur - qui - e Le cou -
3 A la por - te de la sal - le Ils en -
5 "C'est az - sez," dit le rus - ti - que; "De - main
p
cres.
ten.
vert se trou - va mis; Je laisse à pen - ser la
ten - di - rent du bruit; Le rat de vil - le dé -
vous vien - drez chez moi. Ce n'est pas que je me
cres
ten.
mf
D C.
vi - e Que fi - rent ces deux a - mis!
ta - le, Son ca - ma - ra - de le suit.
pi - que De tous vos fes - tins de roi,

Doll's Cradle Song

Reinecke.

Andantino.


Sleep, Dol-ly, sleep, soft - ly re - pose, Sleep, Dol-ly, sleep, your
lit - tle eye-lids close; While in school I am sigh-ing, You in bed are ly-ing,
And have all the day, Time e - nough for play. Sleep, Dol-ly, sleep,
p
pp
Ped.


Soft - ly re - pose, Sleep, Dolly, sleep, your lit - tle eye - lids close.
Ped.
*
Ped.
*
Hush, my pretty, go to sleep, While I sing you of the sheep, And the lambs that
p
night-ly wander, In the dark sky - mea - dows yonder, Sleep, my Dolly, sleep.

Reading List for February

Abraham Lincoln

FEBRUARY 12, 1809—APRIL 15, 1865

Biography and Criticism

Blaine.	*President Lincoln.* (See his *Twenty Years of Congress,* pp. 215-549.)
Bolton.	*Abraham Lincoln.* (See her *Lives of Poor Boys Who Became Famous,* pp. 342-367.)
Ellis.	*Abraham Lincoln.* (See his *Makers of Our Country,* pp. 164-172.)
Hapgood.	*Abraham Lincoln; the Man of the People.*
Holland.	*Life of Abraham Lincoln.*
Johnson.	*Short History of the War of the Secession.*
Mabie.	*Abraham Lincoln.* (See Warner, *Library of the World's Best Literature,* v. 23, pp. 9059-9064.)
McClure.	*Anecdotes of Abraham Lincoln and Lincoln's Stories.*
Morse.	*Abraham Lincoln.*
Phillips.	*Abraham Lincoln.* (See his *Speeches,* 2d series, pp. 446-453.)
Phillips.	*Lincoln's Election.* (See his *Speeches,* 1st series, pp. 294-318.)
Tarbell.	*Life of Abraham Lincoln.*

Speeches

Lincoln.	*First Inaugural Address.* (See Johnston, *American Orations,* pp. 16-31.)
Lincoln.	Same. (See Warner, *Library of the World's Best Literature,* v. 23, pp. 9070-9074.)
Lincoln.	*Speech at the Cooper Institute.* (See Warner, *Library of the World's Best Literature,* v. 23, pp. 9066-9069.)
Lincoln.	*Gettysburg Address.* (See Johnston, *American Orations,* v. 4, pp. 123-124.)
Lincoln.	*Inaugural Speeches; the Emancipation Proclamation and Other Speeches.* (In *Old South Leaflets,* v. 1, No. 11.)
Lincoln.	*On His Nomination to the United States Senate.* (See Johnston, *American Orations,* v. 3, pp. 168-183.)
Lincoln.	*On the Dred Scott Decision.* (See Johnston, *American Orations,* v. 3, pp. 154-167.)
Lincoln.	*Perpetuation of Our Political Institutions.* (See Warner, *Library of the World's Best Literature,* v. 23, p. 9065.)
Lincoln.	*Second Inaugural Address.* (See Johnston, *American Orations,* v. 4, pp. 125-128.)
Lincoln.	Same. (See Warner, *Library of the World's Best Literature,* v. 23, pp. 9075-9076.)
Lincoln and Douglas.	*First Lincoln and Douglas Debate.* (In *Old South Leaflets,* v. 4, No. 85.)
Douglas.	*The Lincoln-Douglas Debate.* (See Johnston, *American Orations,* v. 3, pp. 184-207.)
Lincoln and Douglas.	*Political Speeches and Debates,* 1854-1861.

Illustrative Fiction and Poems

Eggleston.	*The Graysons.*
Holmes.	*Memorial Verses.* (See his *Poetical Works,* v. 2, pp. 266-267.)
Lowell.	*Ode Recited at the Harvard Commemoration.* (See his *Complete Poems,* p. 400.)

St. Valentine's Day

FEBRUARY 14

Origin and Observance

Beard and Beard	*St. Valentine's Day.* (See their *American Girls' Handy Book,* pp. 464-468.)
St. Valentine's Day	(See Chambers' *Book of Days,* v. 1, pp. 255-257.)
Thorne	*Who Began It? St. Nicholas,* v. 3, pp. 258-259.

Stories

Coolidge	*Blue and Pink. St. Nicholas,* v. 2, pp. 245-248.
Coolidge	*How St. Valentine Remembered Willy. St. Nicholas,* v. 1, pp. 218-221.
Flint	*Lady Ann's Valentine. St. Nicholas,* v. 9, pp. 303-306.
Swett	*A Queer Valentine. St. Nicholas,* v. 10, pp. 243-247.

Poems

Cloud	*Ye Valentine. St. Nicholas,* v. 26, p. 312.
Kellogg	*Sending a Valentine. St. Nicholas,* v. 9, p. 266.
Poulsson	*St. Valentine's Day.* (See her *In the Child's World,* pp. 191-196.)
Wyeth	*Sweetheart's Valentine. St. Nicholas,* v. 1, p. 217.

George Washington

Biography and Criticism

FEBRUARY 22, 1732—DECEMBER 14, 1799

Washington	(See Chambers' *Book of Days,* v. 1, pp. 284-286.)
Girault	*Vie de George Washington.*
Guerber	*Washington's Boyhood.* (See her *Story of the Thirteen Colonies,* pp. 191-199.)
Irving	*Life of George Washington.*
Irving and Fisher	*Washington and His Country.*
Lodge	*George Washington.*
Poulsson	*Washington's Birthday.* (See her *In the Child's World,* pp. 197-200.)
Scudder	*George Washington; an Historical Biography.*
Smith	*Story of Washington.*
Sparks	*Life of Washington.*
Tomlinson	*Mother of George Washington.* (See his *Stories of the American Revolution,* pp. 55-62.)
Uncle Junivell	*Farmer Boy and How He Became Commander-in-Chief.*
Wiggin and Smith	*Little George Washington.* (See their *Story Hour,* pp. 115-132.)

Addresses and Letters

Account of the Army at Cambridge. (In *Old South Leaflets,* v. 2, No. 47.)
Address to Congress on Resigning His Commission. (In Lodge, *Story of the Revolution,* v. 2, pp. 261-262.)
Addresses to the Churches. (In *Old South Leaflets,* v. 3, No. 65.)
Farewell Address. (See Warner, *Library of the World's Best Literature,* v. 38, pp. 15667-15682.)
Farewell Address. (In *Old South Leaflets,* v. 1, No. 4.)
Journal of His Tour to the Ohio. (In *Old South Leaflets,* v. 2, No. 41.)
Inaugurals. (In *Old South Leaflets,* v. 1, No. 10.)

Letter to Benjamin Harrison and Other Papers. (In *Old South Leaflets,* v. 1, No. 17.)
Letters of Washington and Lafayette. (In *Old South Leaflets,* v. 4, No. 98.)
Letters on the Constitution. (In *Old South Leaflets,* v. 4, No. 99.)
Washington's Legacy. (In *Old South Leaflets,* v. 1, No. 15.)
Words on a National University. (In *Old South Leaflets,* v. 4, No. 76.)

Illustrative Fiction and Poems

Cooper.	*Lionel Lincoln.*
Cooper.	*The Spy.*
Holmes.	*Ode for Washington's Birthday.* (See his *Earlier Poems,* pp. 242-244.)
Lowell.	*Under the Old Elm.* (See his *Poetical Works,* v. 4, pp. 74-89.)
Mitchell.	*Hugh Wynne.*
Thackeray.	*The Virginians.*

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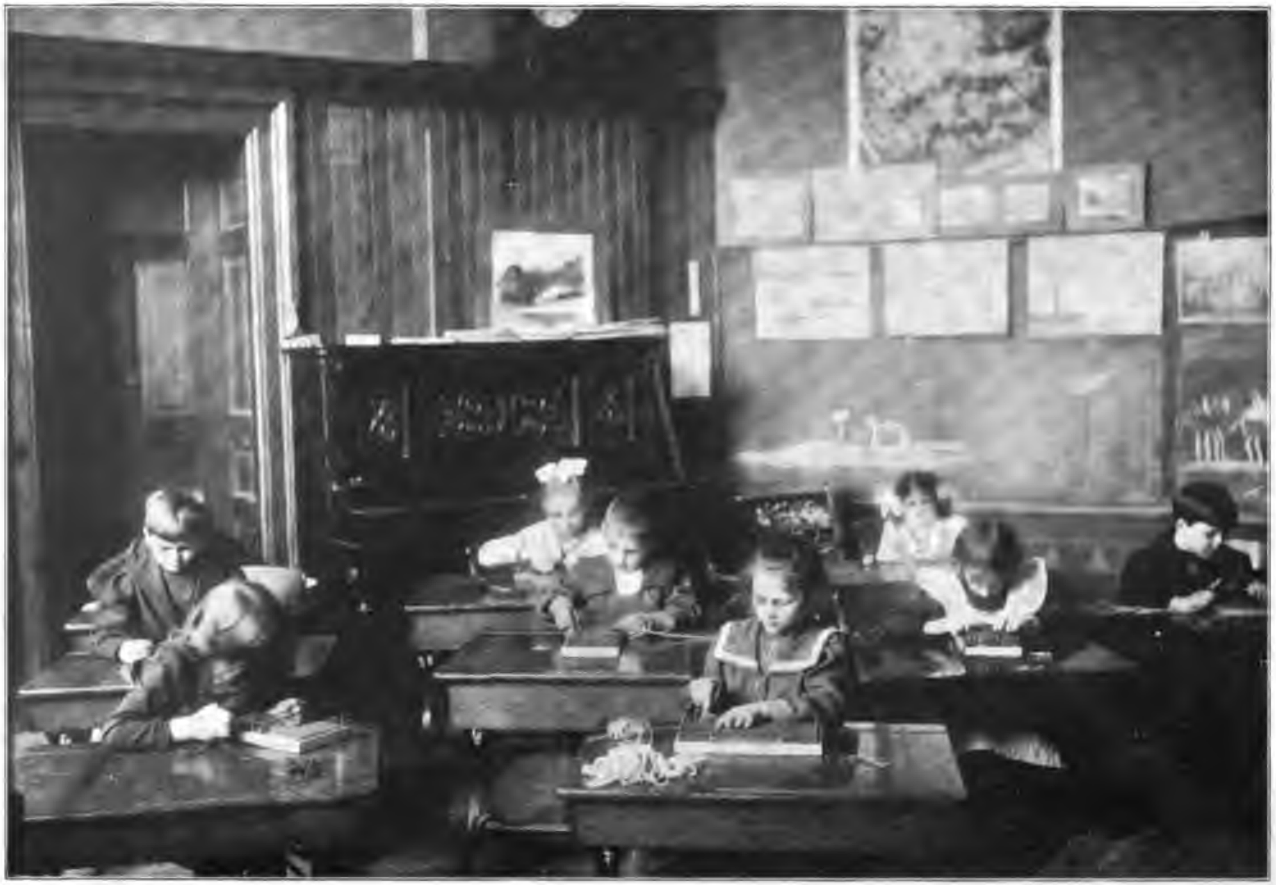

EXPRESSION IN HISTORY
See Miss Rice's article, page 612

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A MONTHLY PUBLICATION FOR TEACHERS AND PARENTS

DEVOTED TO THE WORK OF THE

CHICAGO INSTITUTE

ACADEMIC AND PEDAGOGIC

MARCH, 1901

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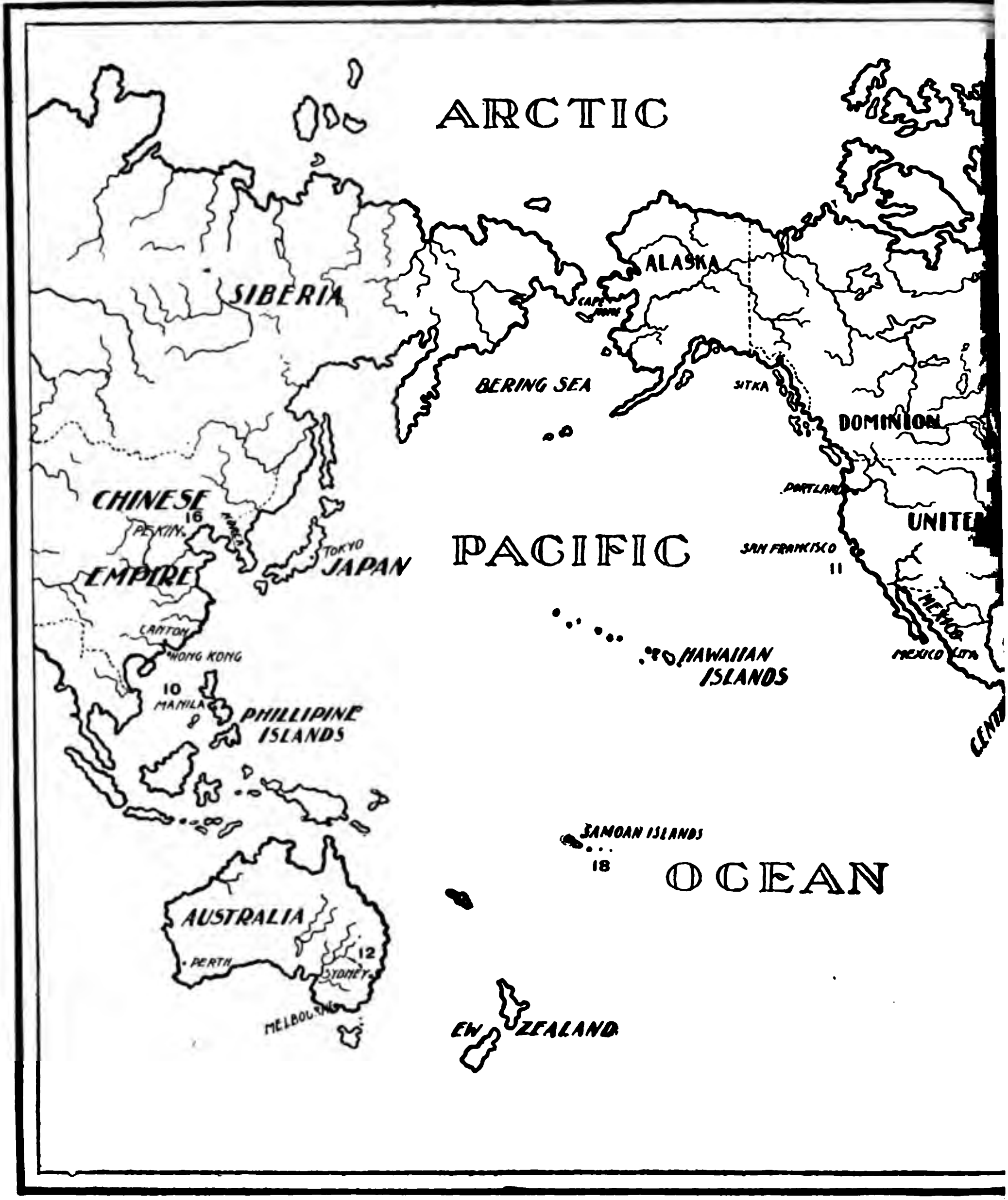
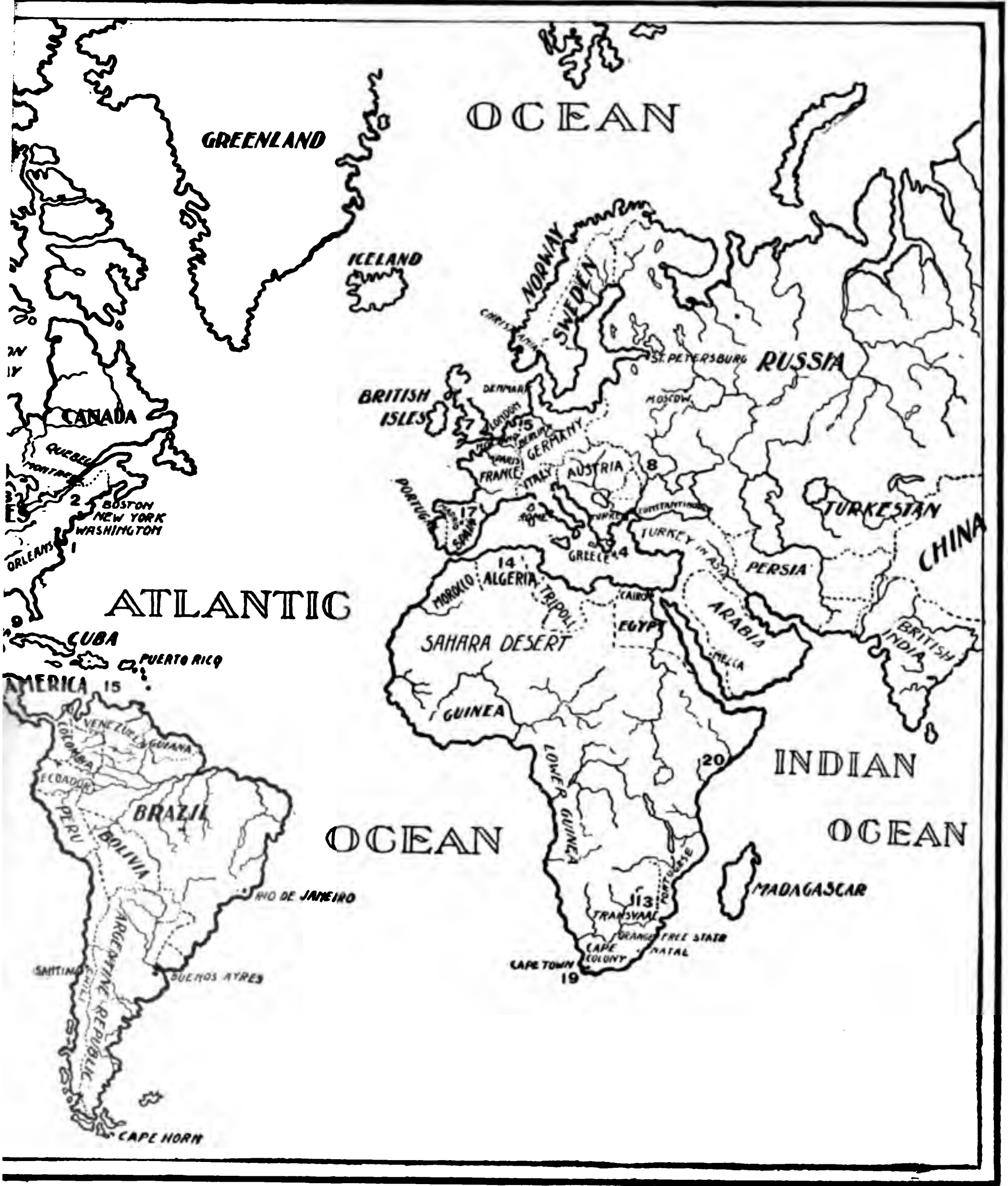


Vol. 2, No. 22 THE LITTLE CHRONICLE, Dyche Building, State

1—WASHINGTON: Conditions to be made if independence is granted to Cuba. Admiral Sampson objected to promotion of gunner to ensign, on social grounds. Department of State negotiating with Russia to end tariff war. Newest statistics place United States at head of exporting nations. 3—CHICAGO: Superintendents' section of Nat. Ed. Assn. voted down proposition to appropriate money to reform spelling of English words. 2—CAMBRIDGE, MASS.. Famous pump on Harvard campus blown up by bomb after 70 years' service. 4—ATHENS: Powers refused to allow Greece to annex the Island of Crete. 5—BERLIN: Census shows 56,345,014 population of German Empire. Emperor William and King Edward of England visited Empress Frederick, who is seriously ill at Cronberg. 6—OMAHA: Two Cudahy suspects arrested. Pat Crowe declared his innocence in letter and offered
to give himself up. 7—LONDON:
Treaty. Irish members obstructing
blizzard raging in Southern Russia.
delegates. Defiance of the United
Uruguayan consuls charged with
of flags to celebrate Washington's
of Rio de Janeiro, from Hong Kong,
133 perished. 12—SYDNEY: Several
to 24. 13—PRETORIA: Lord Methuen
beestefontein. Gen. French pursuing
blew up culvert and looted military

OF THE NEWS, MARCH 2, 1901.



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ı cabinet discussing Hay-Pauncefote
ss in Parliament. 8—ODESSA: Fierce
VANA: Cuban constitution signed by
ı growing. 10—MANILA: Italian and
insurgents. Natives buy $25,000 worth
. 11—SAN FRANCISCO: Steamer City
ed on Fort Point Ledge, Golden Gate:
ers wrecked in hurricanes, February 22
ted small victory over Boers at Harte-
Botha in East Transvaal. Gen. Delarey
rain near Johannesburg. 14—ALGIERS:

French troops put down local disorder among Algerians. 15—CARACAS: Revolution in Venezuela growing; several British steamers destroyed. Newspapers make bitter attack on Americans. 16—PEKIN: Minister Conger granted sixty days leave of absence. W. W. Rockhill acting ambassador. Boxer leaders punished. Waldersee's expedition against Singan Fu abandoned. 17—MADRID: Order restored temporarily. 18—SAMOAN ISLANDS: Gold reported found in black sand deposit on Upola. 19—CAPE TOWN: De Wet and Steyn escaped British cordon; their forces reported broken up. Gen. Hertzog attacked the town of Richmond, Central Cape Colony. Relief sent to garrison. 20—MOMBASA: British force attacked and 17 killed by Somali negroes.

VOL. I. MARCH, 1901. NO. 7.

THE COURSE OF STUDY

A PUBLICATION FOR TEACHERS AND PARENTS

ISSUED MONTHLY—TEN NUMBERS A YEAR.

Morning Exercises

Francis W. Parker

In class and grade, like ages and stages of growth, similar tendencies, desires, and interests make it possible for the teachers to organize the little communities into a beautiful life, the basis of which is co-operation and help. In the morning exercises all the good things of class and grade may be poured into the larger life of the whole school. Some one has said that "togetherness" is the motto of the new century. The morning exercises mean "togetherness." Here the tots of the kindergarten, the pupils of the elementary school, the students of the secondary and pedagogic schools, and the faculty mingle in a happy and profitable twenty minutes. Every one either takes an active part or is ready to help when aid is needed.

Subjects for Morning Exercises: Every subject presented to the assembled society should grow out — be in fact the efflorescence — of the life in class and grade. Nothing should be in any way extraneous to the intrinsic movement of the school. There must be no attempt at show or mere exhibition.

Days: The great days of the past should be remembered; great events, birthdays of great men and women, whose spirit should permeate and guide the school. For instance, the lives of Washington and Lincoln should bring into the children's hearts with renewing power the wisdom, love, patience, and world patriotism of the two great Americans. Bunker Hill and Lexington should show the value of unity in a holy cause. All history should make us feel deeply how much of blood and sacrifice we cost. Shall we be worth what we cost?

Celebrations Common to the Entire Human Race: THANKSGIVING should bring the school into one beautiful and highly significant phase of human life, a phase common to the savage and the civilized. Not the Pilgrims alone were thankful to God for his beneficent gifts. All mankind throughout the ages have expressed gratitude for the bounties of heaven. The child should enter into the past through concrete illustrations, through dramatic and pictorial art. He should bring his offering of thanks in the same spirit, broadened with enlightenment, in which the savages, barbarians, and civilized have always celebrated Thanksgiving.

CHRISTMAS. Every child is a type of the Babe of Bethlehem. The story of the Wise Men from the East teaches a universal truth and duty. All the riches, the progress, the good, are laid at the feet of the little child, with the prayer that every little one may be imbued with the same love for mankind that wrought righteousness through the soul of the Master.

EASTER. The resurrection from the seeming death of winter, the new life, the continued miracle of spring, have kept the flame of love of God in pagan and Christian alike. The resurrection of the Saviour embodies the deepest desire of man, and symbolizes a continuous new life within the reach of every human being.

MEMORIAL DAY. Here again we may sum up the cost, count in a measure the price of human liberty, and look forward to the "unfinished task."

Nature Study: It is our purpose to keep the school in close touch with the "rolling year," to fill the children with a warm feeling for nature as it changes. The results of field excursions and laboratory investigations should come into the morning exercises by description and pictorial art. The whole school should be brought into the closest sympathy with the experiences of every class and every child.

Very important discoveries in science, and their discoverers, should come into the assembled life of the school. The same may be said of world-changing inventions and their inventors.

Current History: No greater mistake is made in education than the teaching of past history at the expense of the present. The telegraph, newspaper, and magazine are bringing us every day news from South Africa, China, the Philippines, Cuba, Venezuela, and from all quarters of the globe. Some of this daily history of the world is epoch-making, and its causes reach back to the remote past. Interest in the present state awakens interest in the causes of present conditions, giving life to that which might be dry and easily forgotten. Every teacher should incidentally teach present history. Once a week, at least, the most important events should be presented to the whole school. Time might be given for any one to tell a bit of news out of the regular order. Children would thus be induced to read the best in the newspapers.

Maps: Current history should always be closely correlated with geography. A large chalk-modeled map of the world should be above the platform of the assembly hall for continual reference. Blackboard maps of the countries in question should be drawn.

The Arts: A morning now and then should be devoted to music, another to pictorial art. Indeed all morning exercises should have music, painting, and drawing intermingled for illustrations and incentives.

Health: Good, sound, robust physical life should have its morning, illustrated by gymnastics.

Preparation: I have said that the morning exercises should spring from the work of the school, representing every class and grade from the kindergarten to the twelfth grade inclusive. All preparation should be made with care and deliberation; nothing should be done hurriedly. All the preparation should be in the best literary and art forms. The morning exercises may be made the best period educationally of the day. Culminations of a series of lessons in any subject may be presented; for instance, in history, Bunker Hill, or Gettysburg.

Opportunities: The morning exercises furnish the best opportunities for practice in extemporaneous speaking. The reading of manuscripts or selections should be the rare exceptions, and not the rule. Students should epitomize historical events or other statements, and present them in their own language. Extemporaneous speaking demands far more careful preparation than do writing and reading of manuscript.

Elocution: Gems of literature form a substantial part of the exercises. They should be brief, carefully selected, and prepared by practice. The duty of the speaker or reader is to make everybody in the hall understand what is said.

The morning exercises also offer opportunity for self-control and respectful, sympathetic attention.

The Plan: The morning exercises are

held at 10:40 o'clock, thus breaking pleasantly the work of a long session. Each member of the faculty is assigned a morning far enough in advance to admit of making complete preparation. The leader should select for the morning reading something brief and correlated. The selection should be the best poetry, with an occasional bit of prose. The selection should be inspiring, and not merely descriptive. The Bible may be freely used for its magnificent poetry and prose, and also its divine lessons.

Marching: Owing to the shortness of the morning exercise period, economy of time is necessary. In order that not a minute may be lost, the pupils in the different classes march to the assembly hall. At three strokes of the bell they cease work or play, and quickly form in line. At another stroke of the bell they march, without command from the teachers, each class led by a marshal. At the close of the exercises the classes march back to their rooms. Besides saving time, marching promotes orderliness and self-control, and makes it possible for the whole school to leave the building without accident in case of fire. To make the marching effective the pupils observe these rules:

KEEP STEP.

KEEP YOUR DISTANCE.

KEEP YOUR CHEST UP.

KEEP YOUR MOUTH SHUT.

The Faculty: Every member of the faculty should take an active, sympathetic part in the morning exercises. They should be promptly on hand with the classes. At any time there is opportunity to put in the right word in the right place, they should encourage the school to individual action by appropriate quotations or suggestions. The members of the faculty can come in strongly when there is any lull in the interest, or any gap in the exercises.

The Results: The effects of morning exercises should be promptly used in class and grade for the promotion of character and community life.

Plant Devices

Wilbur S. Jackman

It is interesting to observe that no matter how different the societies to which they belong may be, all plants have precisely the same life problem to solve. They do this by utilizing the same things and by employing practically the same means. That is to say, the plant in any environment establishes itself and preserves itself through relationships which it maintains between itself and the sunshine (light and heat), moisture, and the mineral world. These relationships are brought about by certain exposures which the plant is able to make to the impinging forces, and its adaptations to extremely diverse environments are but the measures of such exposures.

In maintaining its different relationships, a primary question with the plant is that of its physical support. In the aquatic societies this problem is reduced to the minimum on account of the buoyancy of the water. The specific gravity of the plant, in certain instances diminished by vesicles, relieves the stem of the responsibility of support, and almost the whole plant becomes devoted to the question of exposure to light. The moisture relation of such plants is so simple, also, that special structures or exposures are scarcely needed.

With the water plants that become anchored in the mud at the bottom, such as bulrushes, the life problem becomes decidedly more difficult. There are now three exposures—one to the soil, another aquatic, and a third aërial. In our zone the difficulty of the problem is much enhanced by the extremes of temperature which affect so differently the three media, earth, water, and air. The part of the plant exposed to the air is subjected to the greatest extremes; that part exposed to the water to considerable variation within narrower limits, while the bottom mud offers heat conditions that are fairly stable. The plant's mode of meeting or evading the difficulties is most ingenious. In the first place it keeps its stem under water, and as a result it is buried in the debris at the bottom and becomes an underground stem. Next, to secure its light exposure it sends to the surface, and above it frequently, stem-like leaves which are stiff enough to support themselves when they are above the surface. In other instances, as with the water lilies, where there is a spread of leaf area, the blade lies on the surface, which much simplifies the problem of support. When the food-making season is over, these plants find it most expedient to sever those relations with the outside world which have been established through the leaves. They find it easiest to drop the structures which have maintained these relations, and to preserve the soil exposure alone as presenting the most stable, hence the most favorable, heat conditions. Incidentally, the difference in the mechanics of the various stem-like leaf structures of such plants as the bulrushes, water lilies, and flags renders a different water exposure possible for each — the first named being the advance, and the last the rear guard of the rooting plant procession toward the deep water.

On the shore, where the supporting power of the water is absent, in order to secure an extended light relation, most plants resort to the device of the upright stem, upon which, in an almost infinite variety of ways, the leaves are spread. This device now becomes possible, because the more solid ground affords a fair anchorage by means of the roots. These plants have gained much in their relations to light, but they have lost something, too. They are exposed to the sudden changes and the wide extremes of temperature to which the air is subject. Unprotected by water, the surface soil becomes subject to extremes almost equally great, and hence many of these plants give up every structure offering exposure, and trust the future to the seed, which, physiologically, has no more of an exposure than the underground stem at the bottom of the pond. In addition to their mechanical function, the roots are now the chief exposure by which the plant establishes its water relation; hence they are relatively more numerous and more widely spread.

On the drier ground, the competition among plants in extending their light exposure becomes intense. To that end great stems with spreading branches are shot up higher and higher. This is made possible by the fact that the dry ground affords a firm anchorage. The increasing height is made possible through the stiffening of the stems, partly by the mineral matter which is gradually deposited by the processes of growth. The water relation in dry ground presents a serious problem. To meet it the roots undergo indefinite division, and are sent out singly and in clusters far and wide to take up every drop of available moisture. Even the good offices of the leaves are enlisted. They, in some instances, funnel the rain and dew down the stem to the roots, and in others shed it off like a roof to the periphery of the root sphere, where there are the most delicate root-tips. This increased spread of root makes it mechanically possible, too, for the plant to carry its light exposure to positions of greater advantage. Many of such plants, the trees and shrubs, have found the habits of the marsh and water plants, that give up most of their structures at the close of the growing season, most extravagant. The former have learned how to protect the essential part of those structures through which the plants make their different exposures. This means an immense advantage to the plant in added possibilities of growth.

As the drier portions of the earth are encountered, the light remaining essentially the same, the plants turn their attention more and more to the solution of the water question. The trees in the great forest areas of the globe can do with nothing less than oceans of rainfall; but many members of the grass tribe, by a most ingenious leaf device and a prolific root development, can thrive where dews almost take the place of rain. In still drier regions the thin spreading leaf structures are abandoned, and the responsibility of maintaining both the light and water relation is assumed by the stem, as in the cactus, where the whole plant becomes a kind of reservoir. Thus it has been, by infinite pliability and patience, that the plants have persisted through millions of years, developing, growing, and spreading until there is scarcely a square foot on the globe that has not been occupied by them.

Spring Studies

Ira B. Meyers

Tree Growth: Relation to Form Structure and Wood Properties

From the first awakening of life in germination through all its life stages to old age and decay, the tree is subject to the varying influences of heat, light, moisture, soil, winds, animal life, and other plants. The total of these external influences is called the tree's environment. The living tree must adjust itself to the constant and varying influences of its environment. To assist it in its adjustment it has certain structures or organs which develop in form and arrangements according to their function and the nature of the tree environment.

Our study of the tree should help us to understand something of the function of its various structures, and how these functions are performed.

It should tell us why one tree is tall and another spreading; why one has an oval and another a conical top; why one tree leaves before it flowers and another flowers before it leaves. Our observations should help us to discover why so many seeds germinate and so few mature; they should enable us to find out from these silent objects their reasons for living and growing as they do.

To do this, we must find out the needs of the tree, and how it supplies these needs in sufficient quantities for living.

I. General Observations.

1. Outline form of unfoliaged trees. (a) Top. (b) Trunk.

2. Variation of form in trees of the same variety. (a) Isolated. (b) Woodland.

3. Variation of form in trees of different species.

4. Try to determine conditions and adaptations which influence tree form.

5. Make drawings showing characteristic forms.

6. What growths determine form?

7. Consider: (a) Form of trunk. (b) Length of branches. (c) Spread of branches. (d) Angle of branches.

8. What is the nature of a growth producing straight branches? Zigzag branches?

II. Twigs and Bark.

1. Note ring-like markings at intervals on twigs. These rings mark the yearly growth of the twig.

2. Compare the lengths of these growths. (a) On different branches of the same tree. (b) On different trees of the same kind. (c) On different trees of different species.

3. Can you tell by the appearance of a tree's top whether annual growth is slow or rapid?

4. How many annual growths can you distinguish on the same twig? (a) Do these growths vary in length? (b) What conditions would cause variation?

5. Do you identify any of the trees by their bark?

6. Make drawings of characteristic barks.

7. What seems to be the function of bark?

8. How do you account for its varied character?

9. Examine twigs for small dots (lenticels). Do these lenticels affect the nature of splitting or peeling of old bark?

III. Trunk Growth.

1. How does a tree increase its circumference? Its height?

2. What part of the trunk is of last year's growth?

3. In what parts of the tree will growth take place this season?

4. What relation as to position will this year's growth bear to that of last year?

5. What markings result from these yearly growths?

6. What relation as to number would the rings at the butt of a tree bear to those ten feet up?

7. How do you account for the height from the ground of the first branches on trees? (These are frequently forty feet up.)

8. Is the heart-wood (duramen) necessary to growth? Proof?

9. The sap-wood (alburnum)? Proof.

IV. Lumber.

1. Try to identify the woods used in house-finishing, furniture, carriage construction, etc.

2. What determines the choice of woods for these various purposes?

3. Make comparative strength tests of various woods. (See Jackman, *Nature Study for Grammar Grades*, p. 275.)

4. Note the various natural grains of woods.

5. Can you determine the trunk markings that determine this grain?

6. Examine cross and longitudinal sections of trees.

7. Show by drawing the position that the various grained woods must have occupied in the log.

8. Can a sawyer tell the style of grain possible before sawing the log?

V. Materials Available for Wood Study.

1. Trees of parks.

2. Cross and longitudinal sections of trees.

3. Hough's *American Woods* (library).

4. Stereopticon slides of wood sections; also microscopic slides for study of structure.

5. Stereopticon slides on lumber industry and forest trees.

References: U. S. Dept. Agriculture, Bulletin No. 10, Division of Forestry, *Timber;* Bulletin No. 24, *A Primer of Forestry.*

Notes on Birds

The few birds of winter and early spring are no less interesting than the greater numbers of summer. The presence of these birds indicates that their food is available during the winter months. It may be generally stated that the presence or absence of birds, their places of living, their structures and habits, are influenced more by their food than by any other factor. If you would understand the meaning of bird ways, find out their places and habits of feeding.

The limited food supply and their small number give an excellent opportunity to know our winter and early spring birds.

In observing birds, try to acquire the habit of noting their shape and size, prevailing color, color marks on head, wing, throat, and tail; where the bird was seen—tree trunk, branches, on ground, meadow, woods, swamp, or shore; what it was doing when seen; characteristic movements; its song or call.

The following birds are found in the vicinity of Chicago during early March:

English sparrow; snow-bird (slate-colored junco), found in meadows, wastes, vacant lots and seed patches; tree-sparrow, frequently seen with the juncos; thistle-bird (wild-canary, gold finch), prairie wastes, seed thickets; horned lark, prairie, or frequently found walking in roadways; black-capped chickadee, wooded thickets, parks, etc.; blue jay; white-bellied nuthatch, on tree trunks, frequently with head downward, a conspicuous acrobat; downy woodpecker, on trunk and limbs of trees, frequently inspecting cocoons; gulls, lake front, our great water scavengers; butcher-bird (northern shrike); crow; yellow-bellied woodpecker; brown-creeper, running up trunks of trees, seldom going higher than the first branches, etc.

In addition to the interest we may have in the life habits of birds, is their influence on plant and other animal life through their food relations. The snow-bird and tree-sparrow feed entirely upon seeds of weeds during winter. Professor Beal has estimated that each of these birds consumes about one-quarter of an ounce of seeds daily, and that in a single state (Iowa) they destroy 1,750,000 pounds or 875 tons of weed seeds annually.

The spring arrival of new birds generally indicates that a new food is available. The geese and ducks begin to fly as soon as the ice breaks on ponds and streams. They have access to the food on the bottom. The robin appears as soon as the ground thaws sufficiently for the earthworm to come to the surface.

I. Observation.

1. Make a list of the birds you see during the first week of March.

2. Add to the list the later arrivals with date.

3. Try to find out the nature of the food taken by these various birds. The time of year during which the food is available.

4. Was the food available in any quantity before you saw the bird?

5. Do birds have any special modification of bill, feet, wings, or tail to assist them in securing their food?

6. Make drawings of the bills and feet of birds showing various modifications and the special function of each.

7. What birds do you recognize by their flight? By their call or song?

8. During the month watch for wild geese and ducks. Can you tell them apart by their flight-formations? By their calls?

II. Special Field Study.

1. Sketch typical meadow, woodland, water areas, etc., and note the birds living and feeding in these areas.

2. To what extent do their habits and structures give them special advantage in the area they inhabit? (a) Discovering and prehending their food. (b) Escaping enemies. (c) Nesting and rearing young.

III. Birds likely to arrive during March: golden-crowned kinglet, purple martin, rusty blackbird, killdeer, song sparrow, fox sparrow, red-winged blackbird, bluebird, bronzed grackle, cowbird, flicker, phœbe, ruby-crowned kinglet, hermit thrush, meadow lark.

References: Year Book, Department of Agriculture, 1898, *Birds as Weed-Destroyers;* Farmers' Bulletin, No. 54, *Some Common Birds;* Thompson, *Wild Animals: Calls and Feeding of Crows, Silverspot* (p. 59), *Winter Ways, Redruff* (pp. 330 and 346); Chapman, *Hand-book for Study of Birds, Bird Life;* Wright, *Birdcraft.*

Art

John Duncan

The subjects of the accompanying cuts, which are made from drawings done by students of the Pedagogic School, have been chosen to illustrate the most primitive form of hunter life. (See outline by Miss Rice, page 612.) The drawings have been edited, to some extent, and simplified to meet the exigencies of printing.

Figures 1 and 2 indicate the arboreal habits of our far-back ancestors, with whom arms and legs shared the offices of prehension and locomotion. Some attempt has been made to render the aspect of these people—the long, strong arms, the short legs and in-turned prehensile feet, the flat nose, the powerful jaws. The outcome is not pleasing, but it brings out by a process of inversion the comparative beauty of the modern face, and makes for the development of the love of beauty. Beauty of face and of person is seen to be the result of the intellectual progress, the improvement of the arts, and the moral uplifting of civilization, and not, as is so often believed, a mere happening without reason or relation.

Figures 3, 4, and 5 show man aggressive, in pursuit of food, and using the rudest weapons; Figure 3, casting stones from an overhanging bank upon the beast beneath; Figure 4, wielding a rude stone hammer; and Figure 5, using the bow and arrow.

Figures 6, 7, and 8 illustrate the occupations in the home; Figure 6, the making of fire with the fire-drill; Figure 7, cooking with the spit; and Figure 8, the chipping of flint implements.

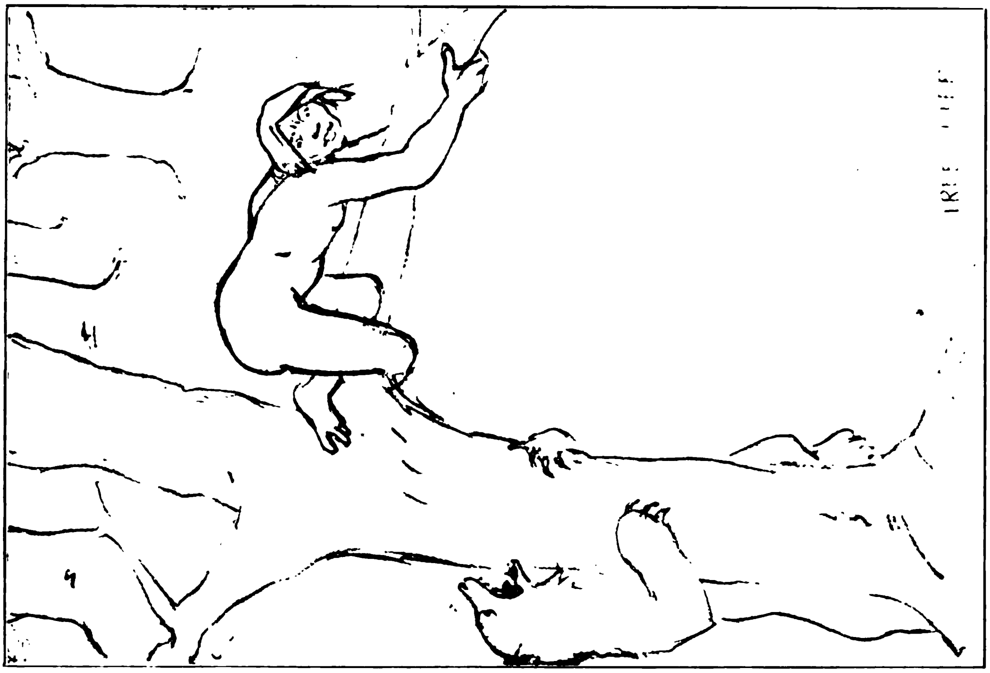
Of course the drawings printed do not represent a tithe of those actually produced. The students worked individually, and each expressed her own conception of the arts and conditions of that life, incorporating in the drawings the results of her own study and observation in the library and museum.

We would have the students take up this matter of illustration seriously. The collation of drawings would issue in picture-books, presenting history in the most vivid way, appealing directly to the eye. All might work together in the prehension and digestion of material, the more skillful leading the way, the drawings being passed through a process of successive editing.

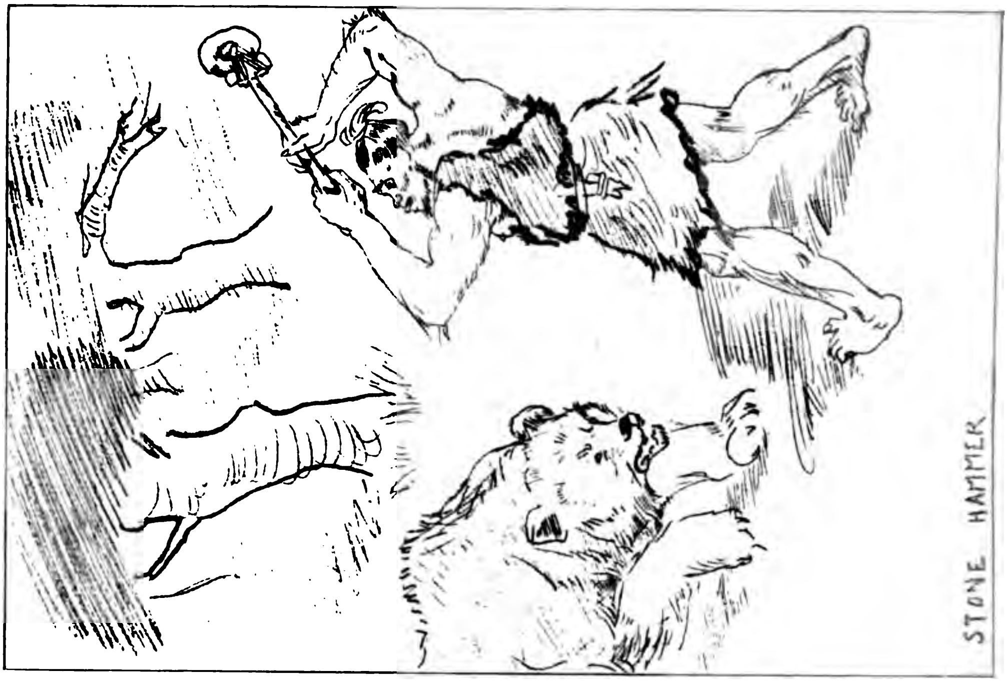
During this month we shall go on to epitomize the life of the early shepherd in the same summary manner, using clay instead of chalk and pencil, modeling statuettes and low reliefs, enhanced and reinforced in some cases with color.

Pottery: The students of the first-year training class are at work upon their pottery, and the painting and glazing of their ware will occupy part of the month.

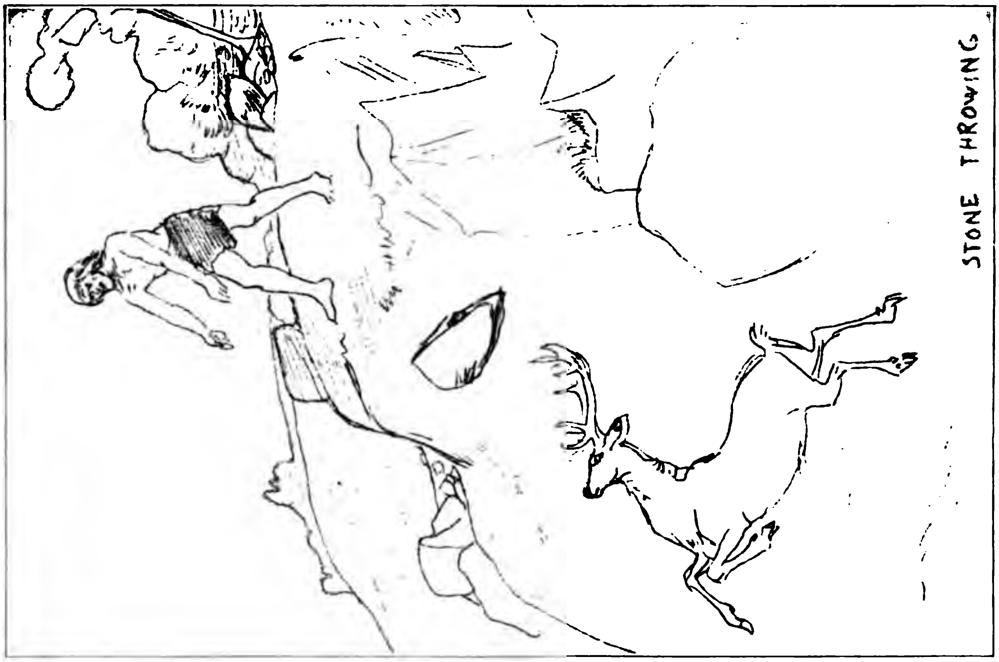
Painting from Nature (correlated with nature study) will alternate with the modeling. The students will try to express in this work the appearance of the day. Walking in the park, we will study the details of the scene, noting the characters of the trees as we go along, the appearance of the sky, the moisture or frost, and then retiring to the Academy of Science, from the windows of which we command an extensive view of the park, we shall proceed to make our pictures. These may be copied from the scene immediately before us, or built up imaginatively from the observations we have made in our peregrinations on the way thither.


TREE LIFE

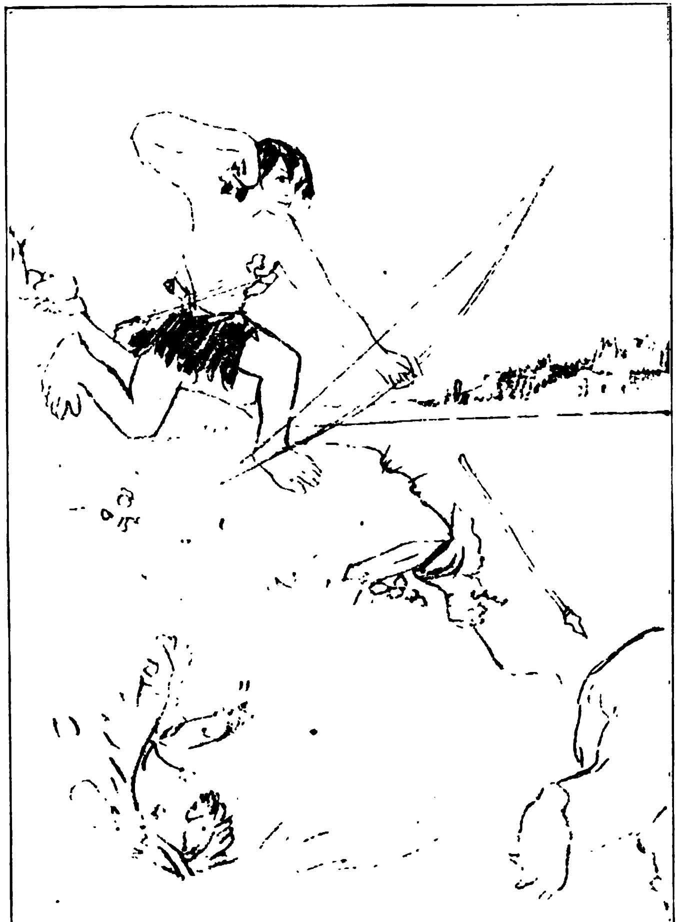
TREE - LIFE



STONE HAMMER



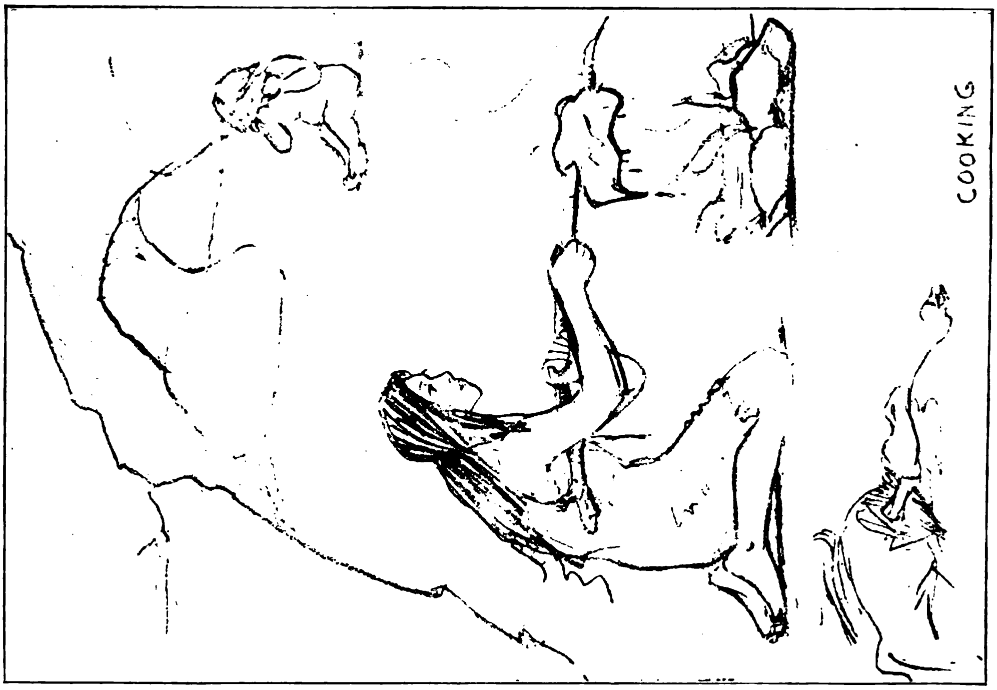
STONE THROWING



BOW AND ARROWS

FIRE MAKING

MAKING FLINT IMPLEMENTS


COOKING

Political Geography

Zonia Baber

The relative value of "human and natural geography" in the elementary schools is now attracting the attention of many educators.

Whichever aspect of the subject takes precedence, its presentation is wholly a matter of the method of the teacher, for the final result must be the same. If one begins with a study of the people, a knowledge of the physical conditions is indispensable; and if the physical environment of man receives first attention, its full meaning cannot be realized until its human relation is ascertained.

It is only when the pupil understands the facts and principles of physical geography, and man's dependence on and adaptation to natural phenomena, that political geography is intelligible.

In the study of boundaries, history claims supreme consideration. One may be able to memorize the location of national limits, but satisfaction is found in knowing the causes which determined their position.

The knowledge of the boundary of every state in the Union, or of all the nations of Europe, is isolated and uninteresting information, until one realizes why California, for instance, is one hundred and fifty times larger than Rhode Island; or why Dakota, when only one-half as large as Texas, was divided into two states, while Texas was left one immense tract, and how the present political map of Europe was carved from its past geographies.

In the study of cities—the focal point of national interest—the knowledge of the causes which have led to their location and development surrounds them with a vitalizing interest. To know that London, the largest city in the world, is located on the Thames River is an item of some slight interest, to be sure; but to know that the Romans, sailing up the Thames, selected the first rise of ground above the level plain upon which to land their goods for distribution among the barbarians, and to have an insight into the influences which have contributed to its marvelous development, is of far greater value.

But little time need be spent in learning the location of the boundaries of the states of the Union, or of the important cities. In tracing on the daily weather map the movement of storms, and of necessity locating the changes of low and high pressure, as storms move across the country, a familiarity with the position of the cities and states is unconsciously obtained.

In the study of people—their dress, habits, and industries—dramatic representation by the pupils (as has been mentioned in previous articles of the COURSE OF STUDY) makes a most effective and pleasing demand for closer study. One never appreciates a character nor a situation so thoroughly as when attempting to portray the individual characteristics or reproduce the situation.

Pedagogic School: NORTH AMERICA: Political divisions:

I. Location of political divisions.

1. Account for present location of boundaries. What boundaries have been decided within recent times?

2. Where are the disputed boundaries located? (a) Why contested? (b) What occasions boundary complication? (c) What lines are most satisfactory as boundaries? (d)

When mountains or rivers are used as boundaries, what frequently results? (See boundary dispute between Costa Rica and Nicaragua.)

3. What changes are likely to occur in the near future in the boundaries of the political divisions of North America?

4. Why does the republican form of government prevail in North America?

5. Is the possession of islands a strength or weakness to the United States? Why?

6. What are the sources of wealth of Canada, United States, Mexico, Central America? (a) Which nation occupies the best position in North America? (b) Why?

7. What are the leading exports and imports of each country?

8. What is our commercial relation with each country? How could our relations be improved?

9. What will be the probable influence of opening the Panama or Nicaragua canal?

II. Distribution of cities.

1. What influences location and growth of cities?

2. Locate and describe principal characteristics of the capital cities. (a) Are they well situated? (b) Why?

3. Locate and describe principal characteristics of the leading commercial cities. Why have they developed?

4. Locate and describe principal characteristics of leading mining cities. What determines their life?

5. Where are future great cities liable to develop in North America?

6. Why is New York the metropolis of North America? Will it maintain its supremacy?

References: Mill, *International Geography; Compendium of North America;* Reclus, *Earth and Its Inhabitants;* Shaler, *The United States of America.*

Art Expression: 1. Model in sand or clay the relief map of North America.

2. Draw on paper large relief map of North America showing political divisions.

3. Draw in color scenes showing typical industrial interest.

4. Write a plan for teaching some part of the geography of North America, adapting it to the Fifth Grade.

Primitive Social Conditions

Emily J. Rice

The prevailing tendency in the teaching of history is to place emphasis chiefly upon its political and governmental features. Perhaps two reasons for this may be discovered. In the first place, the last century saw a great struggle for individual freedom and for equality of political rights. It was only at the end of the century that these notions began to give way to that of social obligation. In the second place, the subject of history has not been introduced into the curriculum until the pupils were old enough to warrant their interest in political institutions.

As public interest in social needs grows deeper, the historic significance of the industrial and economic phases of history is better understood. We learn that economic conditions underlie political institutions, and must be taken into account in their development.

The attempt to give the children an appreciation of their social environment shows also that industrial history may be made useful for almost the youngest children in the schools. They may learn that the implements and machinery seen daily in use have been worked out slowly by the necessities of the race. They feel the possibilities of their own work as they see it illuminated by the patient efforts of past workers.

In order to find the beginnings of industrial history, we must go back to a time when man depended directly upon nature. In the early life of the race, all the arts were in simple forms and grew out of very evident necessities. Primitive man was obliged to provide himself with food, clothing, and shelter, and in order to do this he solved problem after problem which nature presented to him. The solution of one problem helped toward the next, and thus, slowly and gradually, the arts of civilization developed.

If the hand-work of the school gives the children an opportunity for cooking, sewing, and building, these occupations furnish a basis for the study of historic industries. History shows the children the value of their work, makes them partakers in the movement of progress.

The earliest historic conditions to present are those in which man subsisted upon natural food, and had no supply stored up for future use. The getting of food, no doubt, occupied the largest share of attention for thousands of years. People must have spent most of their time in procuring their precarious supply of roots and berries, or even of animals. They remained in one place only until these were exhausted, and then wandered about the forests in search of more. Consequently, their shelter was of the poorest sort, in such places as nature supplied, as trees and caves, or in rude huts of their own construction.

They needed tools to help them in hunting and fishing, and this need led to the shaping of stones, and finally to that remarkable assistance, the bow and arrow. From the skins of the animals which they procured for food, they made their clothing. They lived in clan groups, often hundreds of people in one house.

This phase of life is represented by the Cave Men and the American Indians. *The Story of Ab*, by Stanley Waterloo, and *Hiawatha*, by Longfellow, are good literary representations of the period.

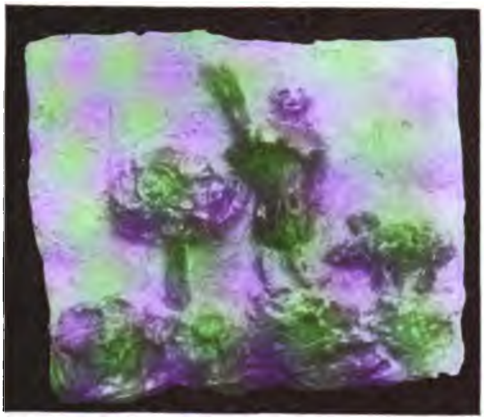
The conditions of life should be presented by the teacher through story-telling and drawing; for instance, the forest environment and the animals of that early time.

WORK OF PUPIL IN SECOND GRADE

The children may suggest what people can do for food, tools, fire, houses, furniture, and clothing. They may also reproduce these arts as far as appears to the teacher consistent with the social value of the articles to be constructed.

The next phase of life to present is that of the shepherd. This involves the taming of animals and a permanent supply of food. The use of artificial food is so important that people who have learned to gain subsistence by it can no longer be called savages, but deserve the name barbarians.

When they stored up food by use of flocks and herds, they still roved about to find food for these animals, but remained longer in one place than before. Their environment was the great plains rather than the forests. Getting their food did not now occupy all of their time, and other occupations developed. They learned to spin and to weave, and to make better tools than before. They lived in tents. They protected life instead of destroying it, and thus became more gentle in character, more thoughtful of human life. They watched the growth of vegetation for their flocks, and noticed the signs of the heavens. Flocks and herds were the property of the



WORK OF PUPIL IN SECOND GRADE

tribes, and the patriarchal family was their social organization.

Shepherd life led gradually to agriculture. Finding a river valley where the soil was so fertile as to tempt them to remain, and where there were mountains, deserts, or seas to protect them from invasion of hostile tribes, they became tillers of the soil. This meant settled homes, permanent houses, perhaps of brick or stone, and therefore the beginnings of architecture, metal tools, division of labor, individual ownership of land, the breaking up of the patriarchal family into the village community, the beginnings of commerce, and finally the development of city life.

The above is an outline of the primitive social conditions that may be presented to children. It will be observed by reference to the October number of the COURSE OF STUDY that the first year's work in our own school is a study of the industries of to-day, with very little attempt to give the history of these industries. Our experience is that the children seven or eight years of age are able to follow improvements in invention, and to trace to some extent the effect of each new invention on the power of man to think and to act. The accompanying illustrations are reproductions of casts made by the Second Grade children in connection with this study, while the frontispiece gives a view of the class weaving.

Pedagogic School: The Pedagogic School is now studying primitive social conditions, with especial emphasis upon American history, and the effect of the geography of North America upon its aboriginal inhabitants. For details of plan, see outlines of Second Grade work by Miss Hollister and Mrs. Atwood in previous numbers of the COURSE OF STUDY, and the Fifth Grade outline by Miss Mitchell in the February number.

A Study of Play

Bertha Payne

The answers given by the Pedagogic Class to the questions in a previous number of the COURSE OF STUDY, under the heading "Reminiscences," have been partially collated, and the first seventeen answers to the question, "What were your favorite playthings before the age of seven years?" are presented here as being suggestive:

1. "I do not remember anything definite of my games and playthings before the age of seven. I do remember that I liked blocks and books, dishes and clay."

2. "Balls, dissected blocks, swing, dolls (only when I was quite little), paper cutting."

3. "My younger sister and I were much together, and always played with dolls. We felt that they were real persons, and made them imitate persons of our acquaintance. I learned to sew for my dolls, and by degrees to sew for myself."

4. "I never cared for playthings. I do not remember any that I had except a doll. The

only reason I liked the doll was that it served as something for me to decorate with clothes of my own making. I was always given books instead of playthings, because I liked them better."

5. "My sister and I treasured our dolls above all other playthings. We played with and loved the headless ones quite as much as the others."

6. "Some of my favorite playthings were a doll, doll cradle, carriage, flat-iron, little pans in which I made cakes of sand, hammer, blackboard, and eraser. I did not care so much for the doll as for the cat, which I used to dress in the doll's clothes, and rock in the cradle and wheel in the carriage."

7. "The playthings I used most were dolls and dishes, table and playhouse, toy animals, marbles, hammer and nails."

8. "My constant and dearest playthings were dolls, especially paper ones."

9. "I do not remember playing with dolls, or making believe. My plays were all of running, playing tag, jumping ditches and jumping rope, and other active outdoor games."

10. "I remember having large families of dolls."

11. "I can remember no playthings that I had before the age of six, save dolls and their furniture and belongings."

12. "My playthings were chiefly dolls."

13. "Dolls; some we made of sticks and flower petals."

14. "Picture books, dolls, and toy furniture."

15. "Dolls, of which I had a large collection."

16. "A baby doll that could be dressed and undressed was the best-loved plaything of my childhood. Things that related to the doll, chest, cradle, and furnishings for the house. Blocks and marbles."

17. "Dolls, small table, buggy, and other appurtenances of playing house."

It is quite evident that the writers were women. Nothing was said to the students who wrote these reminiscences of dolls, or indeed of any other playthings. It is remarkably suggestive. If this love of repeating the life of older people in play is so strong, it is quite certain that it ought to be recognized in the early school life of children as well as in the kindergarten.

Even in these few statements one can find two elements of interest that are common to most children, and can be employed in an educative way:

1. Love of dramatic play.
2. Love of making.

The following extract is given in full because it presents a clear picture of a child absorbed in play, playing continuously, and studying life with a view to creating scenes through dramatic action:

"I remember little of my childhood before the age of seven, and the memories are very broken. Before that age most of my games were with my mother, and sometimes with my uncles. I did not go to school before I was seven. As nearly as I can remember I looked upon the people as more apart from me than objects, which seemed to be a part of myself and to share my pleasures.

"I liked best those games that called for invention and imagination. I remember having whole families of buttons, and these button people were very real to me. A certain carved box of ivory chessmen was a constant delight; but the greatest joy among my playthings was a clothespin; in fact, two different sizes of pins, which I could dress in scraps of cloth and whose faces I could mask. They were much more interesting than all the toys given me, although I always loved my dolls, especially as I grew older. I never cared particularly for any one doll, but had a large family of small ones that lived together in a house, and really lived to me. Even now I sometimes keep on with the story of their lives, and I would not part with that family. It has grown up with me.

"I used to sit in the front pew of the church while my mother sang in the choir. I can remember hoping that every one knew it was my mother. At the next opportunity I would let my large clothespin doll sing to a very great congregation, and then the little clothespin would sit so still in the front seat and not turn around even once.

"It seems to me that my most vivid images were those left in connection with music in some way.

"I was always much interested in anything in which I saw a possible chance of entertaining my doll family, and of having them reproduce the experiences in their own action. It was for this reason, also, that I was so fond of reading and being read to. I always had a great deal of it, and found in it much material for play reproduction. I had especial joy in imitating the actions of older people. One of my first memories is of finding a glove, putting it on, and yawning as I had seen a visitor do.

"I used to imagine large cities around the roots of trees, and here would have every event take place that I could recall in my own experience. I planned whole days of events and played them. When the boys played with us, one of them usually took the lead, and we were willing followers in the more exciting games of battle that ensued."

ANALYSIS:

1. Note the absorption of this child in the world of imagination and its realization in play.
2. The part played by objects, not so much materials used in making as symbols. The object had no real correspondence in detail to the thing it was made to represent. It merely suggested it.
3. The plays grew as experiences multiplied and ideas became fuller and stronger. It was continuous.
4. Reading with express purpose of expression in dramatic form.
5. Study of people and events with the same purpose.

PRINCIPLES INVOLVED:

1. Dramatic presentation is one great means of holding ideas and expanding them in childhood.
2. Vividness of imagery characterizes the play.
3. Vividness and truth to nature in the play show that the child was not merely imitating the external form, but absorbing the mood, and often motive, of the person imitated.
4. It follows that there is here much implicit study of psychology.
5. Is it worth while to make conditions such that the child has the best model from which to copy?
6. The force of suggestion is a powerful factor in determining what a child reproduces in play.
7. The kindergarten uses this instinct. Is it possible to suggest too much—to exclude experiment, invention, and to delay the work or attainment of real ends too long?

The essential educational principle in these plays is that of growth by means of expression. Characters are tried on, and in so doing the children enter into a comprehension of them, consequently into sympathy with other persons. They are thus forming ideals, and living them. Here is the place of the story as a great force, made more effective by dramatization. As the children of a kindergarten were playing Grimm's story of *The Elves and the Shoemaker*, one tiny three-year-old was heard to murmur, "Good little brownies." Yet there had been no moralizing.

Life is bounded for the younger children by their immediate environment. Interest centers round the more striking activities, especially those that contribute in some way to their welfare. Processes, such as blacksmithing, housebuilding, the work of the engineer, all industries, in fact, that come within the child's experience, are food for play representations, and have their function in enlarging their ideas of the skill of the worker and the mode of work as well as the motive.

Materials are needed to realize these images. For nursery plays, the youngest children need but an object or two as a center on which to expend activity. The imagination transforms; so a bottle becomes a doll, a rolling-pin, or a soldier, as the idea changes.

Construction begins when details of the image demand a greater fitness in this material. Blocks, clay, sand-paper, and crayon, scissors and paper, respond readily to the growing idea. Just as dramatic plays become more complex, so constructive plays utilize greater skill and invention. So control of hand and eye keep pace with enlarged experience. The block house needs furniture, each room its appropriate articles. These must be well put together, be as like the real thing as possible. The doll's clothes necessitate choice of color, study of form; and so do the furnishings for the doll's bed, the table linens, and the kitchen wares.

The transition from play to work is thus gradually accomplished, and the play of the children of the kindergarten, born of the moment and dropped again, becomes more extended in purpose and more real in form.

Music

Helen Goodrich Bertha Payne

Pedagogic Class

I. Sight-reading of new songs, in all keys, first in unison and then individually. Effort will be directed especially toward individual interpretation, after a silent reading of the new musical thought.

II. Sight-reading of rounds as the simplest form of part singing; from this the class will pass quickly to singing part songs in the canon form.

III. Study of part songs in all keys.

IV. Study of scale relations derived from songs. Practice in transposition, where it is desirable to change key, will lead to a study of the relations of the sharp and flat keys to each other.

Heretofore the technicalities of vocalization have received some attention, also the construction of children's songs, but during February the class began a study of the pedagogy of music reading for the first time.

QUESTIONS:

1. Should reading music be put upon the same psychological basis as reading language?

2. What elements are present in staff notation that complicate the process of sight-reading?

3. Should children express musical ideas as freely and as early as they use speech?

4. Does the average child receive as much external stimulus to build up melodic rhythmic images as he receives for forming concepts of the appearance, qualities, and other relations of objects in his thought world? Does he think or attend to tone images with anything like the persistence and frequency that he does to other images? If not, should reading music be begun as early as reading language?

Songs: ROUNDS: *We Merry Minstrels, Hunting Song*, and other rounds in the Second and Third Books of the Modern Music Series.

CANON: *Like as a Father* in Tomlins' Children's Songs and How to Sing Them.

PART SONGS: *Spinning Song, The Violet, Spring Song*, and *Pussy Willow's Secret*, in Songs of Life and Nature (Scott, Forsman & Co.).

The Organization of a Library

Irene Warren Frances Simpson

Classification

For many years each library had a scheme for the classification of books on its own shelves. Every library, no matter how small, felt it desirable to have the books arranged on the shelves according to some classification, and when the public had free access to the books it was believed a necessity. Many perplexing problems arose, such as how minutely to subdivide the classes, and what system of marking or notation should be used to mark the books. At last it was found that many libraries could use the same plan of classification. Specialists were asked to outline their subjects, and these were put together and a notation fitted to the whole plan. Two schemes of classification for books and library material have been carefully worked out in this way, published, and are used to considerable extent throughout the country, and are being adopted in libraries abroad. These are the Dewey Decimal Classification and the Cutter Expansive Classification.

There are often many books in the same class, so an arrangement of books in each class is necessary. It has been found best to arrange the books of each class alphabetically by the authors' surnames; if the book is anonymous, by the first word of the title (excepting *a*, *an*, and *the*). A scheme for the marking of the author number has been published as the Cutter Decimal Author Table, and a more elaborate plan as the Cutter Alfabetic Order Table. The volume number, if there is more than one volume, should be added, and if more than one copy of the book is in the library, the copy number. A possible call number of a volume of Longfellow's poems classified according to the Decimal Classification would be—

811
L85
cop. 2 v. 3

No two books in a library should have exactly the same number, because the books are known in the library records by the call number. The call number should be put in pencil in the upper left-hand corner of the inside cover of each book, and plainly printed in black ink on the label on the back of the book.

It is not necessary for a librarian to read every book in order to classify it. He can usually place the book from the title-page, the preface (which often gives the aim and scope of the book), the table of contents, and by reading a few pages here and there.

The books should be arranged on the shelves consecutively according to their marking. Those books which do not circulate, but are used for reference, should have some mark to distinguish them, and should be shelved in one place. In some libraries a star, in others the letter *r*, is placed before the call number. The lower shelf of every section of shelving should be made high enough to shelve the oversize books. If an *f* for folio or *q* for quarto, as the case may be, precedes the call number, the person looking for the book will be referred directly to the oversize shelf in that section.

An outline of the classification, showing the exact location of each class of books in the library, and also any notes which will explain the shelving of the reference and oversize books, should be placed where the readers can easily refer to it.

Manual Training

Ira M. Carley Cora Champlin

The pupils who are studying woods will make a piece of apparatus for testing the breaking strength of the different varieties of wood. It has been decided to make the tests for determining the strength with weight at right angles to the grain with pieces 14 in. x ½ in. x ½ in.

The apparatus will consist of a base 16 in. x 4 in. x 1 in. At each end of this base, upright pieces 5 in. x 4 in. x 1½ in. are set and screwed firmly in position.

On the upper end of each upright, at the middle of the inner edge, a square rabbet ½ in. x ½ in. x ½ in. is chiseled to receive the ends of the stick to be tested.

Along the center line of the base a slot, 10 in. x ¼ in., is cut to allow the passage of the cord by which the weight is suspended from the piece with which the experiment is being made.

The center point of the base is marked, and a scale of ¼ inch is laid off along the edge of the slot from the center toward each end.

For furnishing and beautifying their recitation-room, the students of the High School have decided to make a screen and a settle.

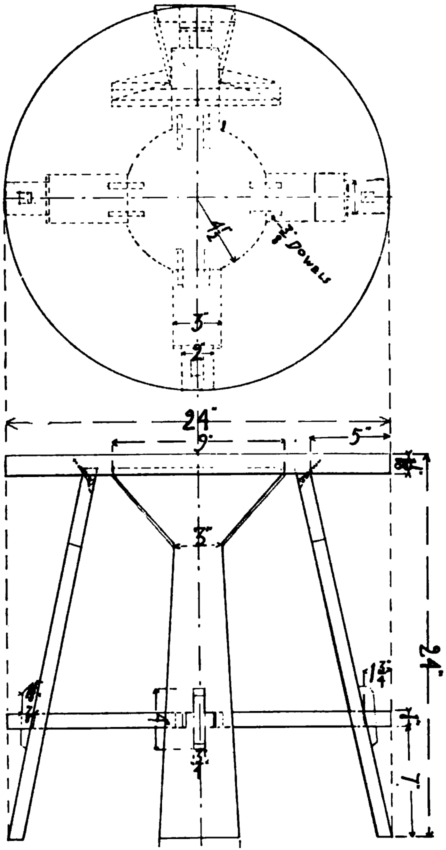
The boys will do the wood and metal work, and the girls will make pillows for the settle and the panels for the screen. Both girls and boys will work on the designs of the two pieces, and on the working plans.

As yet only the general dimensions of the pieces, determined by the places they are to occupy, have been decided.

The first step in the work will be the making of a preliminary sketch giving the ideas of each pupil. The class will decide upon the most satisfactory one of these sketches, and it will be modified and elaborated, with whatever advice may be necessary from the Manual Training and Art departments.

From the preliminary sketch, a picture large enough to be seen by the whole class will be made.

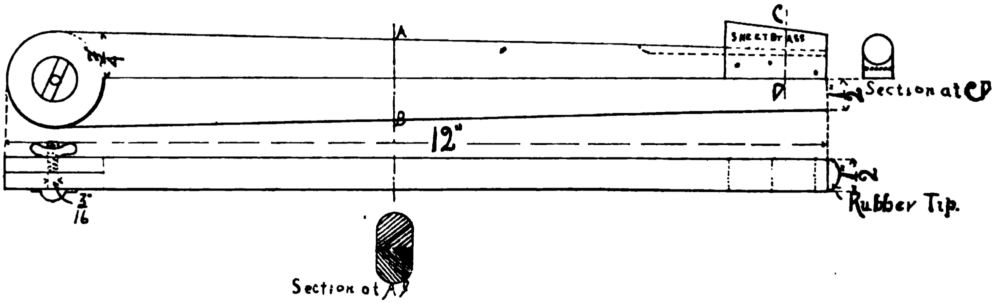
From this picture, and from whatever written specifications in addition may be necessary, the working plans will be made.



TABLE

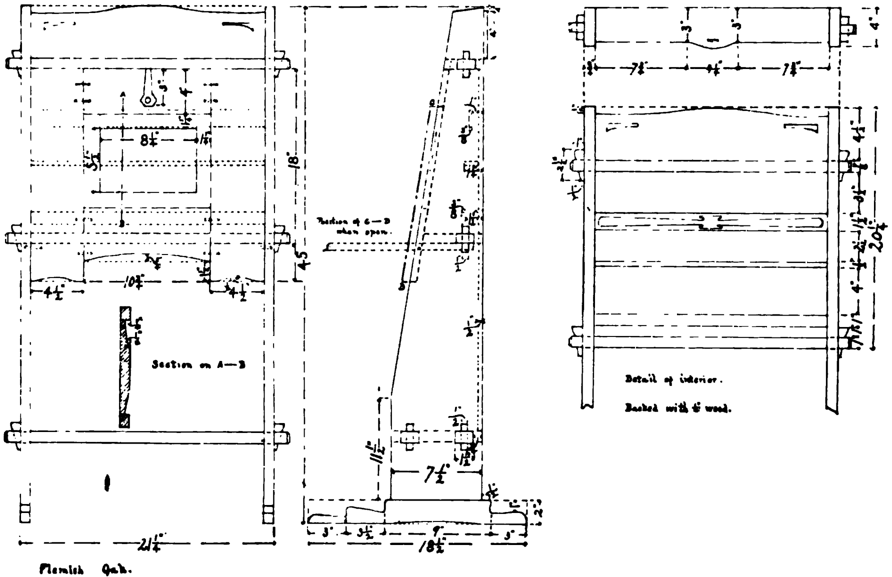
Oak, stained brown or gray-green.

This plan is for use of the High School or Pedagogical students in the Arts and Crafts work.



BLACKBOARD COMPASSES

Pencil compasses for blackboard drawing. To be made by 1st year High School students for use in geometrical drawing.



DESK

Physical Training

Carl J. Kroh Caroline Crawford

Individual Gymnastics

I. Suggestions as to direction of necessary attention and work.

The first essential of all physical development is nutrition. If the nutrition of the child were carefully studied, and some knowledge of what is essential for the proper assimilation of food obtained, the results of effort toward a better physical development would be much more satisfactory. The following course is outlined for the winter and spring quarters. The amount of food consumed daily by the child will be at first estimated in only a general way by averaging daily servings. Later more accurate work will be obtained. The condition of the blood—amount of hæmoglobin, and number of red corpuscles—will be found from examination. This data will be combined with the measurements of the body, and thus some interesting and valuable results can be obtained which will furnish a more comprehensive and accurate basis for future study. This study includes the co-operation of the mother and considerable home attention. The following table is a guide:

Name ....

Date						
Amount of food						
Proteid						
Fat						
Carbohydrate						
Total						
Calories						
Blood						
Hæmoglobin						
Corpuscles						

II. Results of measurements, physical defects.

What are the most prominent defects needing special attention? This question must of course be answered in every individual school, but if the answer includes the same things in general, and if the number of children needing such individual attention to overcome mal-development is large, then the conclusion which must be drawn is that the conditions at home and school are not yet conducive to the best development of the child. Here is the basis for our future study of the physical development of the child.

From the Fourth to the Eighth Grades, inclusive, there are scheduled as a result of examination the following defects, which are prominent enough to demand constant attention and remedial treatment:

Forward head, 10.
Flat chest, 4.
Hollow chest, 4.
Prominent scapulæ, 11.
Low shoulder, 6.
Hollow back, 10.
Irregular hips, 5.
Lateral spinal curvature, 2.

There is emphasized in this outline the lack of attention, or the wrong direction given to the position of the child when standing. All motor work in the school—reading, singing, writing—must be an opportunity for emphasizing the standing position. Good standing should be a habit, learned as a child learns cleanliness, and it is as much a part of personal hygiene.

The analysis of standing will be the next subject treated of under individual gymnastics in the COURSE OF STUDY.

References: Atwater and Benedict, ***Experiments on the Metabolism of Matter and Energy in the Human Body*** (U. S. Experi-

ment Station Bulletin No. 6); Atwater and Langworthy, *Digest of Metabolism Experiments in which the Balance of Income and Outgo was Determined* (U. S. Experiment Station Bulletin No. 45); Atwater and Rosa, *Description of a New Respiration Calorimeter and Experiments on the Conservation of Energy in the Human Body*) U. S. Experiment Station Bulletin No. 63); Atwater, Woods, and Benedict, *Report of Preliminary Investigations on the Metabolism of Nitrogen and Carbon in the Human Organism* (U. S. Experiment Station Bulletin No. 44); Randolph Faries, *Practical Training for Athletics, Health, and Pleasure*, pp. 71-81; Robert Farquharson, *School Hygiene and Diseases Incidental to School Life*, pp. 37-73; M. Foster, *Text-Book of Physiology*, pp. 379-386; Foster and Shore, *Physiology for Beginners*, pp. 128-151; Mrs. L. E. Hogan, *History and Present Status of Instruction in Cooking in the Public Schools of New York City* (U. S. Experiment Station Bulletin No. 56); Wm. Howell, ed., *American Text-Book of Physiology*, pp. 213-306; H. Huxley, *Lessons in Elementary Physiology*, pp. 143-168; Jordan and Hall, *Digestibility of American Feeding Stuffs* (U. S. Experiment Station Bulletin No. 77); D. F. Lincoln, *School and Industrial Hygiene*, pp. 19-23; New York State Reformatory (Elmira), *Eighteenth Year Book*, pp. 140-150; F. L. Oswald, *Physical Education, or the Health Laws of Nature*, pp. 27-73 and 226-241; E. A. Parkes, *Manual of Practical Hygiene*, pp. 203-224, 225-290 and 294-368; J. E. Pilcher, *First Aid in Illness and Injury*, pp. 70-76; E. H. Richards, *Cost of Living as Modified by Sanitary Science*, pp. 65-81; Snyder, Frisby and Bryant, *Lessons in Boiling Vegetables and the Composition and Digestibility of Potatoes and Eggs* (U. S. Experiment Station Bulletin No. 43); Snyder and Voorhees, *Studies on Bread and Bread-Making* (U. S. Experiment Station Bulletin No. 67); Julius Uffelman, *Manual of Domestic Hygiene of the Child*, pp. 13-109; C. E. Wait, *Dietary Studies at the University of Tennessee in 1895* (U. S. Experiment Station Bulletin No. 29); C. E. Wait, *Nutrition Investigations at the University of Tennessee in 1896 and 1897* (U. S. Experiment Station Bulletin No. 53); A. D. Waller, *Introduction to Human Physiology*, pp. 248-289; W. H. Williams, *Chemistry of Cookery*, pp. 313-324.

Home Economics

Alice P. Norton

Pedagogic School: The work of March will complete the course on food given to the training class. No attempt has been made to present a thorough course in cookery. The aim has been to illustrate principles, and to give to the students an insight into the subject which will enable them, if they choose, to do further study by themselves, and to enter into the work of the special teacher with whom they may be connected in their teaching.

The work for the latter part of February and the first of March will be on yeast bread, and baking-powder mixtures. Special topics will be assigned to different members of the class. The outline of work is as follows:

I. Yeast.

1. Definition:

A simple one-celled plant, of minute size, reproducing by means of budding.

2. Form and structure:

Oval in shape; consisting of a cell wall of cellulose filled with protoplasm.

3. Conditions favorable for growth.

(a) Moisture.

(b) Food:
  Proteid.
  Mineral matter.
  Sugar.

(c) Temperature of 20° C. to 30° C. (68° F. to 86° F.).

4. Changes caused by growth.

Yeast is a ferment, and as a result of its life processes changes sugar into alcohol and carbon dioxide. In the process of bread-making starch is changed into sugar, and authorities differ as to whether this change is produced by means of the yeast, or by a ferment present in the flour. The chemical reactions may be expressed as follows:

STARCH. WATER. SUGAR.

$C_6H_{10}O_5+H_2O=C_6H_{12}O_6$ (dextrose),

or or

2 $C_6H_{10}O_5+H_2O=C_{12}H_{22}O_{11}$ (maltose).

DEXTROSE. ALCOHOL. CARBON DIOXIDE.

$C_6H_{12}O_6$ (+yeast)=2 C_2H_6O+2 CO_2

MALTOSE.

$C_{12}H_{22}O_{11}$(+yeast)=4 C_2H_6O+4 CO_2.

The souring of bread, that is, the change of alcohol into acetic acid, is produced by bacteria, not by yeast.

5. Kinds.

Yeasts in common use in bread-making are liquid, dried, and compressed yeasts. The last is a by-product of the whisky industry.

6. Experiments.

(a) Add to a cup of boiling water one tablespoon of molasses, and one-eighth of a yeast cake crumbled into bits, and pour the mixture into a tumbler. Add an equal amount of molasses and yeast to a tumbler of ice-water, and also to a tumbler of water at a temperature of 80° F. Notice the time when bubbles, indicating the formation of gas, appear in the liquid, and the comparative amount of gas formed. Which is the least favorable to the growth of the yeast, extreme heat or cold?

(b) Fill a test-tube with a mixture of molasses and water, and add a little yeast. Invert the test-tube in a saucer containing a little of the molasses mixture, support it in place, and leave for twenty-four hours. Identify the gas formed by bringing the mouth of the test-tube next the mouth of another tube containing lime-water; and by inserting a lighted match in the gas.

(c) Examine some yeast under the microscope.

II. Wheat.

1. Structure of wheat grain.

A section will be studied under the microscope to show the starch cells, the gluten cells, and the different layers of the bran.

2. Manufacture of flour from wheat, with a description of the milling processes.

3. Composition of flour.

Atwater gives as the average composition of one hundred samples: Water, 12.5%; proteid, 11.3%; fat, 1.1%; carbohydrates, 74.6%; mineral matter, 0.5%. The class have already determined roughly the composition by the following experiment: Weigh 50 grams of flour, tie it into a weighed square of cheese-cloth, and wash in water till nothing more can be washed out. Examine the tough, elastic substance which remains in the cloth. Dry this on the cloth and weigh it. The starch may also be dried and weighed.

4. Comparison of wheat flour with that from other grains, as a material for bread-making. Mix flour and water, corn-meal and water, rye flour and water, and compare the doughs formed. The gluten of the wheat gives the elasticity to the dough, and enables it to retain the bubbles of gas formed.

5. Comparative digestibility and nutritive value of white and whole-wheat flour.

III. Process of bread-making.

1. Comparison of long and short process. The former probably produces a more digestible loaf, but the latter is easier to watch, as to temperature, etc., and so less likely to sour. For class-room work the short process is best.

2. Rule.

Many different methods give good results.

The one given will be;

1 pint of liquid (milk, or milk and water).
1 tablespoon of butter.
1 tablespoon of sugar.
1½ teaspoon of salt.
1 yeast cake moistened with ¼c. of water.

Flour to make a dough stiff enough to knead (about 6 cups).

Scald milk, add butter, sugar, and salt, and cool to 80° F., or until it feels cool to the finger. Break the yeast into bits, and mix it thoroughly with the water at a temperature of 80°; add to the milk, and stir in the flour gradually, with a knife or wooden spoon. When the dough is just stiff enough to make into a smooth ball, knead it on a slightly floured board till smooth and elastic. Return it to the mixing bowl, cover closely with a cloth and tin cover, and let it rise till double its bulk, keeping it at a temperature of about 75°. Shape into small loaves, place in the pans, cover, and let rise till it again doubles its bulk. Bake in a hot oven for about fifty minutes.

3. Discussion of reason for use of each material; essential and non-essential materials distinguished. Importance of temperature; reasons for baking.

II. Baking-powder mixture.

The class will be asked to look up the subject of baking powders, and to outline a lesson on the subject suitable for a class in the Seventh or Eighth Grade. The question of how much chemistry it is desirable to teach such a class will be discussed, and from a number of experiments suggested, those best adapted for the pupils will be selected. The following week one member of the class will teach the lesson to the Seventh or Eighth Grade, while the other members will observe.

The rest of the month will be given chiefly to a discussion of methods of teaching, of the correlation of cooking with other subjects, and of the value of such work in the training of the pupil.

References: Mrs. Wilson, *Handbook of Domestic Science;* Goodfellow, *Dietetic Value of Bread;* Richards and Elliott, *Chemistry of Cooking and Cleaning;* Mrs. Abel, *Practical, Sanitary, and Economic Cooking,* pp. 81–106; Lassar-Cohn, *Chemistry in Daily Life,* pp. 87, 96, 108; Sedgwick and Wilson's *General Biology,* pp. 184–200; Jago, *Science and Art of Bread-Making;* Government Pamphlets, Bulletins 34, 35, 67, 112; *American Kitchen Mag zine,* Dec., 1900; also Vol. 7, pp. 3 and 195.

Cooking in the Primary Grades

Flora J. Cooke

During this month but little actual cooking will be done, as another phase of school economics seems more important and essential to the children at this time.

The question will be the simple purification of water for drinking. They will attempt to make pure enough for drinking the water from the hydrant, and that which they bring home from the lake and the swamp. The same problem in another form will be presented during the month—i. e., to get sugar from maple sap. For this purpose they have as usable knowledge their observations in all the previous cooking lessons, their practical experiences at home, and many general observations in regard to moisture.

As a direct preparation for next month's work in planting the garden, the children will make a record of what they have observed concerning the absorption and evaporation of water. In this connection, to correct false impressions or clear up vague images, they may need to prepare and to cook again various foods used in previous months.

In the Third and Fourth Grades the children have already asked questions and made surmises which will make necessary some or all of the following experiments:

Number: Requiring work in volume, area, weight, time, and lines, in addition to subtraction, multiplication, division in whole numbers and fractions.

Evaporation: In the work in cooking last month the children discovered that when rice was soaked over night in a certain amount of water there was always some of the water which had not gone into the substance, for which they could not account. It was necessary to have enough water to cover the rice during the time it was soaking, and they could not estimate the necessary amount. This month we shall have the following explanatory experiments in evaporation. These will also give some useful data for their garden work in May.

Problem: What affects the rate of evaporation?

1. Series of simple experiments with two tin water vessels of equal size, placed under varying conditions.--Fill the vessels with water; weigh them. Close one of the vessels, leave one open. Place them in a warm, light place for a certain length of time; weigh again. Place in a cold, dark place. Place near the ceiling, near the floor, outdoors, etc., for the same length of time. Compare the results. What caused the differences observed?

2. Series of experiments with the following tin vessels, each having a capacity of 16 cubic inches, but of varying depths, shapes, and areas of exposed surface. Open surfaces of boxes: 4 x 4, 8 x 2, 16 x 1, 2 x 2, 8 x 1, 2 x 1, 2 x 4, 1 x 1, 1 x 2. Fill these with water and subject them in sets to the above conditions. In accounting for the differences noticed, it will be necessary for the children to find the contents of each box, the area of open surface, the relation of the open surfaces to each other, the weight of each before and after a certain period of evaporation. Record the conclusions made by the children. See if they use these results to explain what they tried to find out last month. How does it explain other things which they constantly see, as the drying of clothes, of the

soil, etc.? Discover if they see any connection between this work and the formation of clouds, rain, but do not force them to make inferences. (See First and Second Grade Outline.)

Correlated reading, writing, and language lessons will be used constantly as means to clear imaging, but the children will not be limited to any fixed form or mode of expression. Their effort will be to make themselves understood, and their work will be criticised from that standpoint.

It will be seen that this work is quite as well correlated with the subject-matter for the Third and Fourth Grade pupils, who are studying the necessities of a city and the qualities required in good citizens, as with that of the First and Second Grade children, for whom it was originally planned.

Answers to Questions

Colonel F. W. Parker:

Dear Sir,—I am reading and discussing with my teachers your *Talks on Pedagogics*. We begin to see through a glass darkly the bearing of the great truths you utter, the terrible inadequacy of our work, due to our false aims; and yet we have to console ourselves with our helplessness unless the public would allow and our superiors in education require us to do differently. You certainly, sir, in my case at least, I am sure, accomplish one thing—a hungering and thirsting for better things, for the truth in education.

But we have now come to your chapter on school government, and I grant the truth of your contentions about the necessity of training the child's will, of giving him a chance to choose, etc. But I cannot see how in schoolroom practice, with children as they are, with homes as they are, we can get along without resorting to expedients other than letting the scholar choose the right if he will, or when he will, as you seem to suggest. For instance, on p. 365 you say: "If a child commits a crime against the school, an immediate punishment may settle the case and bring quietness, if this is the end to be worked for; but it does not educate the child. He has no choice; he is not led to rule himself; he is compelled to comply through fear." Now, of course, you do not mean here a beginner in school, or one who has done something he did not already know he should not do, but rather, I suppose, you mean one who has done something that the teacher thinks is wrong, but he—the child—does not think is wrong. Then, of course, all you say applies. But suppose the scholar does purposely and willfully what he knows to be wrong, and which he fully admits is wrong (and they will so do, and admit it and persist in the doing, and are the ones who cause all the real difficulties in discipline), what shall we do with him? I work on these plans and principles, and I will be wonderfully obliged if you will criticise them constructively. I mean, give something where you take it away.

The case:

I am responsible for a grammar school.

Nine teachers out of ten are poor disciplinarians. (You say, get good ones—impossible.)

Problem: How to get the best of it. (This I wish you would criticise, pro or con.) I instruct teachers to do their utmost to keep things right with the least possible pressure, but if a child willfully and purposely and repeatedly violates well-established standards of conduct and order, his written record of conduct suffers accordingly, and justly so, for he has no right to be rated equal to his mates who do well. When he has lost one hundred demerits, he is to *be brought* by his teacher to me for a hearing. If he continues, he must write sentences for his marks hereafter until he loses two hundred, when he must be *brought* for a second hearing; and for marks after two hundred to three hundred he must take notices of his misconduct home to his parents; and when he has lost three hundred he will be suspended for a time, and readmitted, to be brought before the Board of Education at his next suspension.

During all this time I do, and try to get the teachers to do, just what you advocate—train the child to choose to do the right because it is right.

And I further claim that any trouble of consequence in a room by *many* children of the room is a defeat for the teacher as a capable disciplinarian.

But I believe, from a principal's standpoint where he is generally responsible for the success of his school, and where he *must* work with teachers of very weak ability as a rule, that some such plan *is necessary* in order that he may best assist them in maintaining workable order.

Now, sir, if it is not asking too much, I wish you would tell me what you can commend in this, or what is a better way, if you cannot commend it. And if you will allow me, I want to say this, which you may often hear, but have probably seldom heard. The people who do the school work, the rank and file, are hungering for bread—the bread of practical suggestions for every-day work from those who in books and on the platform deal in the great principles. We cannot get it in books, nor from the platform. And the few papers that attempt to give it, or some of it, are not written by those capable of speaking in accordance with the great principles of teaching.

If you can give me anything on this question of discipline to help in our study, I will be very grateful to you. Very truly,

———————.

This letter is from a superintendent who is trying very hard to help his teachers. It is a typical letter, and might have been written by hundreds, perhaps thousands, of superintendents.

All advance in education must necessarily be very slow, depending as it does wholly on the teacher, and the teacher upon the public. No system, no method, nothing can help teaching without, first, a knowledge of principles and their practical application on the part of the teacher. But this much is decidedly true, that no corps of teachers can come together week after week and discuss earnestly and honestly questions pertaining to the welfare of their pupils without constantly finding something better. This is especially true if they are not fixed in their ways of doing things, and have a great faith that there is something better.

The question of order is the whole question. When put in the right light, it means attention on the part of all pupils, it means study, it means compromise on the part of each pupil for the good of the whole. Order is the movement of a school. It may be external and repressive, or it may be internal and growing. Most of school disorder is due to the fact that the children have not the right work to do, the right mental nutrition. There is in many schools a narrowness, a semi-starvation of the mind of the pupils which leads them to use their energy in some direction, no matter how or where. Disorder is in general the fault of the teacher. Exceptions to this rule can be easily understood. Of course, the faults of home, heredity, all come in, but with a teacher who will take the means, that is, all-around educative work, disorder will be reduced to the minimum. The marking system is an unnatural and immoral means of keeping children in an external, false order. It is a device calculated to suppress the best in them. The question of order is not a question of limbs or body. It is a question of mind, of a mind attentive and growing.

The best advice that can be given is: Continue to study education, continue to apply what you find. Do not expect great results at first. Be sure your principle is right, and follow it with great steadiness.

FRANCIS W. PARKER.

Reading Lessons for the Primary Grades

Science Series No. 3

Flora J. Cooke

A Good Friend

Guess who I am!
I am your good friend.
You could not live without me.
If you climb high mountains, I am there.
If you go into deep dark mines, I am there, too.
The fire could not burn without me.
The birds could not fly or sing.
Oh! I often play with you.
Sometimes I run you a race.
But I never get out of breath.
I snatch away your hat, and shout,
"Catch me, if you can!"
I fly your kite and sail your boat.
I make beautiful music.
Often you will not listen to me.
That is strange!

I am very strong.
I bring the snow and the rain.
Yet I know how to carry the tiniest seeds.
I bring Jack Frost to your windows.
You never thank me for the pictures.
That is because you do not see me.
I am invisible.
Oh! I am a fairy, am I? Guess again.

I have not told you half I can do.
When I am still, you call me—
When I am moving, you call me—

Water

Science Series No. 4

We use water every day. We use it for drinking, cooking, sprinkling, washing, bathing, and for power.

We brought home some water from the lake and let it settle. We found sand in the lake water.

We brought home some water from the swamp. We let that settle, too. We found loam in the swamp water.

We examined these waters under the microscope. After that we did not wish to drink them.

We need pure water to drink, so we tried to purify the lake and swamp waters.

We boiled them. The water all boiled away, but the sand and loam were left. We tried again.

We caught the vapor from the water upon cold glass. There was no sand or loam in it. The water was pure.

A Game

We played we were out on the ocean. We had no water to drink, and we were all very thirsty.

Some one said, "Let us get the water from the ocean." We did this, but the water was salt. It made us more thirsty.

A boy said: "I know. Let us strain the water." We did this, but the water was still salt.

Then a girl said: "I know. We must boil the water." We did this, but the water seemed more salt than before.

The captain said, "Try catching the water vapor on cold glass." We did this. The water was fresh and pure.

How do you think that we got enough water to drink?

Sunshine Stories

Literature Series No. 7

(Adapted from Hans Andersen by Gudrun Thorne-Thomsen.)

This is the story the sunshine told.
Once there was a beautiful bird.
It glittered and shone, for it was of pure gold.
It was so beautiful, and sang so sweetly, that people were happy when they saw or heard it.
Many a boy and girl tried to catch it, but never could do it.
One day the bird flew far into the forest.
An old woman came to gather sticks for her fire.
"What glitters so in the grass?" she thought.
She picked it up, a wonderful gold egg.
A bird sat in a tree and sang.
The woman carried the egg home.
She took good care of it.

One day it cracked, and a beautiful bird pushed out its head.
This bird had four golden rings around its neck.
The woman had four sons.
She gave each boy a ring.

Once the first boy played near a ditch.
He found some clay and took it in his hands.
He molded and molded till the clay seemed to live.
He had made a great statue.
People wondered at his beautiful work.

The second boy went into a meadow.
How sweet the flowers were!

Red, yellow, blue, and purple. Yes, all colors were there.
The boy took some flowers in his hand.
The juice flew into his eyes and dropped on the ring of his finger.
His eyes and his hand began to work.
He painted the pretty flowers, the trees, and the sky.
People talked of what a great painter he was.

The third boy put the ring between his teeth.
Then he blew on it.
It was like a bird's song.
It sounded like the wind in the tree-tops.
It sounded like a brook running down the hill.
People began to sing when they heard him.
The boy was happy.

The fourth little boy went into the woods.
He sat down under a tree, with a pen in his hand.
The wind came and whispered something to him.
The boy wrote it in his book.
Then he went to the great ocean.
The waves whispered something to him.
He wrote it in his book.
The rain and the sunshine, the flowers and all the trees told him their secrets.
The boy wrote it all in his book.
What a beautiful story he told.
"I kissed each leaf of the book," said the sunshine.
People are happy when they read this book.

"Awake!" said the sunshine,
"'Tis time to get up,
Awake, pretty daisy, and sweet buttercup.
Why, you've been sleeping the whole winter long;
Hark! Hark! Don't you hear?
'Tis the blue-bird's first song."

The Kindergarten

Outline for March and April

Anne Elizabeth Allen

Unity

" Many hands make light work."
"All needed by each one."

Working with one's hands, instead of holding its place among the blessings of life, has been looked down upon as only intended for those who have been forced by poverty to engage in it. In order to reinstate manual labor to its really high position in the economy of individual as well as national life, we must begin to dignify it in the eyes of little children. He who works well, who accomplishes in the deftest, most skillful way a piece of work, earns the respect of all.

When each one does his share of work, and seeks to make this share a help to the whole, working toward the perfection of that which will be of service to the most people, then must his place in the community be recognized and respected. For this reason, certain duties should be given each child at home and at school, the performance of which in the best way shall be easily recognized as necessary to the good and comfort of all.

The preparation of the earth by the spring winds, rain, and sun for its summer occupation by plant life offers us a wide field for experiment and observation. Each element performs its function in its own time, and when all work together equally, the result is shown in the perfect growth of vegetation.

Beginning in March, we shall observe closely the work of the wind upon the earth and its function in domestic and commercial life, in nature, and in play; and we shall endeavor to find out our relation to the best use of it, as a power.

Function of the wind in domestic life: Drying clothes and drawing water; in the country, turning the fans of the mill.

In commercial life: Blowing ships whose sails are spread.

In nature: Blowing old leaves and grasses out of the way, and getting seeds out of crevices.

In play: Helping to fly kites and to turn pinwheels, weather-vanes, etc.

Watch the direction of wind, and find which wind prevails; which wind is warmest, which coldest. Observe work of the wind outside, and make excursions to the park as often as the weather permits, to watch for seeds, return of birds, etc., and examine condition of earth.

April will bring warm rains. We shall watch the thawing of the earth, and get different kinds of soil, loam, sand, and mixed loam and sand, put it in boxes or flower-pots, and test the nourishing qualities on the growth of beans or peas. Also test growth under different conditions—with and without water, sunlight, warmth, and different soils. Observe changes in nature as spring rains begin and sun grows warmer, seeing how all the elements work together to prepare for summer.

Next we shall take up house-cleaning within doors.

Articles needed: Brooms, dust-pans, tack-hammers, tack-claws, tacks, nails, scrubbing-brushes, chamois-skin, dust-cloths, buckets, ladders, picture-hooks, paint, paint-brushes, mops, water, soap, sapolio, etc.

Work for each Person.

Mother's work: Putting things away that are not to be needed soon again, such as heaviest bed-clothes and clothing, and with the father's help selecting new decorations, furniture, etc.

Children's work: Keeping clothes and toys picked up and out of the way, and keeping hands off of new things; trying to dress themselves, and to be as careful as possible not to step on clean floors with soiled shoes.

Maid's work: Taking up carpets, wiping up floors, cleaning walls and paints, beating mattresses, airing bedding, washing curtains.

Man's work: Beating carpets and rugs, oiling and waxing floors, carrying all heavy furniture, etc.

Materials: Paints, charcoal, chalk (painting landscapes, illustrating stories, etc.); clay (illustrating stories); paper, scissors, and paste; large blocks; second, third, fourth, and fifth gifts; triangular and square tablets; sticks, rings, and lintels for decorative designs.

Stories: *Bluster, Bright, and Sparkle* (see April number); *One Day with the Wind* (see April number; *Flying Kite*, F. D. Sherman.

Games: Wind horses; wind blowing clothes on line; wind-mill; ships sailing; kites flying; flags in wind; weather-cock; wind blowing leaves and grass.

Songs: *Weather Song*, *Rain Clouds*, *Wind Song*, Hill's Songs; *Rain Coach*, *Rain Shower*, *The Sunbeams*, *The Sun*, Smith's Songs, Part II; *Wind Song*, *Wind-Mill*, Smith's Songs, Part I; *The Wind-Mill*, *The Wind*, Gaynor's Songs; *Sons of Æolus*, Moore & Hill Songs.

Instrumental Music: *Instrumental Characteristic Rhythms*, Part II, Clara Louise Anderson; *Musical Rhythms for Piano*, A. D. Scammell.

Rhythm: Bowing movement, music by A. D. Scammell.

GAME OF DRYING CLOTHES: Place several children at arm's length to represent posts. Rope stretched by grasping hands.

Other children bring out washing, which may be their handkerchiefs, or towels, or imaginary articles. Still other children may find out direction of wind, and stand in corner from which it comes, representing blowing of wind. Sunbeams may also dance around washing, and when dry, it may be taken in and clothes-line and poles turned back to children.

SAILING SHIPS: Wind, represented by children, coming from direction discovered outside. One child represents a ship, holding towel or apron for sail. A sailor spreads sail against wind, and ship moves off. He lowers sail, and ship stops moving. Several ships may sail at once. When direction of wind changes, sailor changes sail to catch the force of it.

First and Second Grades

Harriet T. B. Atwood

Geography: The work upon the typical areas, as outlined in October and November, will be resumed during this month, and some of the regions will be revisited.

Owing to the heavy snow-fall during the past months it may be prophesied that Chicago and the surrounding flat region will be a land of slush and mud, with many portions under water. These conditions will be noted by the children, and the problems of drainage, sanitary conditions, and preservation of roads will be discussed as they arise. The children will make some simple experiments in the geographic laboratory, based on their own suggestions, with regard to draining the regions visited.

Field trips proposed :

1. Visit to truck farms between Evanston and Chicago.

Note: Changes since autumn; condition of ground; kind of work going on at the farms; condition of roads. The children will bring back samples of soil and of water from the well.

2. Visit to swamp region south of Eighty-third Street, near Stony Island Avenue.

Note: Topography and condition of land where houses have been built; topography and condition of land which has been left vacant; condition of roads; condition of soil in swamp; remnants of vegetation in swamp which was once Hog Lake. The children will bring back samples of soil and water from the swamp.

3. Visit to the bluff at Highwood, if weather permits.

Note: Changes in appearance of bluff since autumn ; condition of soil ; appearance of stream ; condition of roads. The children will bring back samples of soil and of water from stream and lake.

History: I. Stories of people who live in regions where the melting of snow and ice in the spring is a factor of great influence. By means of pictures and stereopticon views the children can study lands where conditions are more exaggerated than those here, and can see how different people overcome the difficulties of their environment. The following topics will be considered:

1. Life along the levees of the Mississippi in the spring.
2. Spring floods in streams fed by mountain torrents.
3. A year during which little or no snow fell. Its effect upon farming.

II. The making of pottery. In connection with the work upon foods during February, and the work of purifying water during March, the children will realize the need of dishes for holding food and water. The stories of the ways in which various people met this need will be interesting and helpful to the children, in so far as they can feel the actual difficulties which stand in the way of making dishes. An understanding of those difficulties can best be gained by actual experience, and the work set the children during March will be the making of dishes.

The children will examine the dishes on their tables at home, and suggest ways of making some for their own use in the school, kitchen, or lunch-room.

On the basis of suggestions given by the children, experiments will be made in order to determine the best way to go to work. Each child will be given clay with which to work out his own idea.

After the dishes thus made have become thoroughly dry, the children will put them to the uses for which they were designed. They will find, of course, that they break very easily — many will be cracked in drying — that the clay rubs off upon the articles placed in them, and that all of them soak up water.

More suggestions will then be in order. A trip will be made to the Field Museum to examine specimens made by the most primitive peoples, also the modern specimens which are glazed and beautifully ornamented.

The children will again make dishes, and will experiment in decorating and baking the second lot.

Literature: Sara Wiltse, *The Story of Grandmother Kaolin and the Clay Dishes;* Kate Douglas Wiggin, *Story of the Porcelain Stove; Story of Palissy the Potter; Story of how Books were once Made of Clay; Story of Luca della Robbia; Legend of the Sleeping Beauty.*

Nature Study: Much of the nature study for March will grow out of the making of a spring calendar by the children. In this calendar will be recorded all the signs of spring which are noted from day to day. Opportunity will be given for the study of any of the phenomena in which the children show an interest. Paintings of the outdoor landscape will be made each week, and records of bud development and germination of seeds will be made in color.

At intervals throughout the year, particularly when great changes in weather have occurred, the children have made observations with regard to temperature. During March, when each warm day causes such notable changes, a daily record of temperature will be kept by the children. This record will be made in graphic form on a series of thermometers drawn on a large chart. The landscapes of October, November, December, January, and February, which were painted by the children, will be mounted on large sheets of cardboard, with the temperature records of the corresponding months.

No generalizations, however, will be made with regard to the meteorological observations and their relation to the spring calendar, unless they come spontaneously from the children. The ages of the children vary from six to nine.

Domestic Science: Work in purification of water for drinking. (See Miss Cooke's outline.)

Manual Training: The making of boats or kites to be used out of doors during the spring. Each child will make a careful working drawing of the object chosen, and determine the kind and amount of material necessary to carry out his plan.

Industrial Art: Making of pottery in connection with work in history.

Music: (MISS GOODRICH.) There is no change in the work of these grades.

Songs: *Come out, Snowwhite Lambkin,* Grieg, Silver Song Series No. 2; *God Sends His Bright Spring Sun, Rain Song,* Songs for Little Children, Part I, Eleanor Smith;

The Sap has Begun to Flow, The Boat Ride, Songs for Little Children, Part II, Eleanor Smith; *Now Melts the Snow, Early Spring, Snowing and Blowing, What the Robin Sings.* Modern Music Series, Primer.

Speech, Oral Reading, and Dramatic Art: I. Phonic games, and training in hearing and reproducing sound. Dramatization of the Indian story of the robin, and the legend of the *Sleeping Beauty.*

II. Poems: *The Tree,* by Björnsen; selections from *Hiawatha's Childhood* and the *Legend of Pearl Feather.*

Reading: Cyr's, First Reader, *The Story of Maple Sugar.* Printed reading lessons on *Water* and *Air* in February COURSE OF STUDY. Texts of songs written on the blackboard. Printed description of how the first dishes were made. Additional reading lessons for Second Grade: Stories of *The Mole and the Lark* and *Peter at the Dyke,* Cook County Normal Reading Slips; *How the] Chipmunk got the Stripes on his Back,* Nature Myths; selections from *Hiawatha's Childhood,* Hiawatha Primer.

Writing, Spelling, and English: Recording signs of spring in the spring calendar. Reproduction on the blackboard of stories read during library periods. Placing of new words in dictionary. Writing of recipes in cook-books. Writing answers to questions which arise during recitations. Placing of dimensions on all working drawings.

Correlated Number: Much number will necessarily be correlated with the experiments in purification of water. (See outline for Domestic Science in Primary Grades). Through constant use of the thermometer the children will necessarily gain power to count by ones, twos, and tens, and will become familiar with most of the combinations of numbers from 1 to 10. Working plans of the kites and boats made in the shop will be drawn to a definite scale and the amount and cost of material calculated by the children.

Physical Training: The March work will be a continuation of that of February, the children learning to use four hurdles.

The games emphasize the running element in preparation for the outdoor sports to follow later.

References: Estropp, *Handbook of Pottery; International Encyclopedia,* Vol. XII, p. 93, *Invention of Pottery;* A. D. Plougeon, Popular Science Monthly, September, 1896, *Potter's Art Among Native Americans;* Art Thoughts, p. 633, *The Story of Palissy;* H. W. Longfellow, *Keramos;* The Great Industries of the United States, p. 826, *Pottery and Porcelain;* Kate Douglas Wiggin, *The Story Hour; Aunt Martha's Corner Cupboard,* pp. 18–30; Starr, *First Steps in Human Progress;* Sara Wiltse, *Kindergarten Stories;* Jackman, *Nature Study,* pp. 259–262; *Nature Study and Related Subjects,* pp. 110–113, and 122–126; Cooke's *Nature Myths;* Rice, *Course of Study in History and Literature.*

Third and Fourth Grades

Gertrude Van Hoesen

Geography: TRANSPORTATION: In the study of the necessities of a city, one important factor is transportation. This subject will be treated from two standpoints:

I. Transportation in the city.

1. Surface transportation: (a.) Horse-car lines. (b.) Cable-car lines. (c.) Electric-car lines. (d.) Hot-air car lines.

2. Elevated trains.

II. Transportation from the city.

1. The great lines of railroad leading out of Chicago.

2. The steamship lines on Lake Michigan.

Under the first division (transportation in the city), the following points will be considered: Reasons for changing from horse-cars to cables; from cables to electric lines; for building elevated railways. How are the tracks laid for the different roads?

For the study of motor-power the plan is as follows:

1. Visit the power-house, and find the power that runs the cable.

2. What power moves the electric cars? How is it generated?

3. Simple experiments in electricity.

(a.) Rub a stick of sealing-wax with a piece of woolen cloth, and hold it near bits of paper or pith-balls.

(b.) Rub it with silk and cotton, and try again.

(c.) Rub a glass rod with the three materials; hold it near paper or pith-balls, and note results.

(d.) Have children see batteries in use, and how this current generated in previous experiments is made continuous.

(e.) Have practical experiments made with the battery.

4. Visit the electric power-house.

5. Have children discover the principle which underlies the hot-air cars and steam power.

6. Visit the Field Columbian Museum, where the first cable car is on exhibition. Note improvements. Visit especially the section where the modes of transportation in all countries are exhibited.

The second division of the subject (transportation from the city), will be taken up as follows:

1. A visit to the different cars which make up the trains leaving Chicago over our best roads.

2. Comparison of the facilities for travel.

3. A visit to the Pullman car shops.

4. Then, by means of the stereopticon, taking a trip over one of the western roads, over an eastern and a southern road, describing the country, and noting the articles shipped into Chicago at the different points.

5. A visit, if possible, to one of the largest steamboats, letting the children see the facilities for transportation by water.

6. Describing, by means of the stereopticon and pictures, a trip through the lakes and down the St. Lawrence.

Nature Study: WOOD: The children have been using wood in the construction of various articles, and have observed that the use of the article often determines the kind used.

1. What governed the choice of wood in the articles all around us?

2. Examine various kinds, especially as to strength, beauty, and durability.

3. What kind of wood is the most beautiful? On what is it generally used?

4. What kind is the strongest?

5. What kind is the hardest?

6. What kind is the most durable?

7. What kind is the heaviest?

Have children cut and polish a specimen of various woods, showing the longitudinal, cross, and quarter-section of each.

The strength test will be made with specimens of uniform size—14 x ¼ x ¼ inches. The weights, varying from one-quarter to ten pounds, may be bags of sand or beans made by the children. The tests, to be of value, must be performed in a uniform way, the sticks being supported at both ends, and the weights being hung exactly in the middle.

Problems: 1. If — pounds are required to break a stick of pine 14x¼x¼ inches, how many pounds are required to break one that is twice as long?

2. How many pounds are required to break a stick 14 x ¼ x ½ inches? 14 x ½ x ½ inches?

3. Draw sticks in each case. If there is doubt have specimens ready to prove results.

4. Draw the picture of a stick of oak that will require — pounds to break it, if it takes — pounds to break one 14 x ¼ x ¼ inches.

Why are houses painted? After carefully examining specimens of painted and unpainted wood which have been exposed to the weather, the children will weigh and soak both kinds in water and note carefully the result.

[NOTE: Specimens of wood will be collected at the shops of the Pullman Car Company.]

Number: The Growth of Trees.

1. Is there any relation between the strength and durability of wood, and its yearly growth?

2. Examine the growth of common trees. (a.) At the end of the twig. (b.) Yearly increase of the trunk.

3. The children will find last year's growth by means of: (a.) Color. (b.) By looking back from the tip of the twig to the first set of rings.

4. Compare this year's growth with that of last year.

This year's growth will be measured on a definite number of twigs from each tree, and the average growth ascertained. It will be interesting to compare the growth from terminal and lateral buds. This work will necessitate addition, subtraction, and partition of whole numbers and fractions.

The data obtained in all cases will be published next month.

Manual Training: The children will need boxes to hold specimens of wood. A box will be planned by each child to hold the specimens which he prepares. It will in every case be an original plan, and each child will be held responsible for a working drawing before beginning.

Preparation of wood sections.

History: The work planned for January and February will extend also through March.

Literature: *Tree Myths: Old Pipes and the Dryad*, by Frank Stockton; *Rhoecus*, adapted from Lowell; *Daphne*, from *Old Greek Heroes*, by Baldwin; *Baucis and Philemon*, by Hawthorne. Continuation of myths told to the Greek children.

Dramatic Art: Training in hearing and producing English vowel sounds. Dramatization of stories continued. Poem to be memorized, *The Wind and the Moon*, by George MacDonald.

Industrial Art: The making of a book to be used as a French dictionary.

French: (MLLE. ASHLÉMAN.) March is the forerunner of spring. The children of the Third and Fourth Grades will watch the first awakening of nature and the return of the birds. The French work will center on birds and bird life. The children will dramatize *A Bird Concert*.

The French, in February, has been correlated with the textiles, nature study and manual training. This will continue throughout the year, and each month some of the children's work will be published to show the outcome. The following are the records which the children made of an experiment on food. These records are never made in English. The French language was used instead of the English for this particular experiment.

Je mets de l'iode sur la pomme de terre. Elle devient pourpre. J'en mets sur la laitue. Elle ne change pas de couleur. J'en mets sur le céleri. Il ne change pas de couleur.

J'en mets sur la pomme de terre douce. Elle devient pourpre.

J'en mets sur l'ognion. Il ne change pas de couleur.

J'en mets sur la rave. Elle ne change pas de couleur.

J'en mets sur le chou. Il ne change pas de couleur.

Les légumes qui deviennent pourpres ont de la farine dedans.—NORMAN PREBLE.

Another child recorded the same experiment in a more condensed form:

Je mets de l'iode sur la pomme de terre douce. Elle devien devient pourpre. Les légumes qui ne changent pas de couleur sont le chou, le céleri, la laitue, la rave et l'ognion.—MABEL WHITNEY.

Le Grand Concert

Robin le Rouge-gorge (*à sa femme*). Cuic! cuic! Ma gentille Babette, l'hiver a fui, voici le gai printemps. Regarde notre maison, le marronnier, il a reverdi, et nos amis, les oiseaux chanteurs, sont revenus des pays chauds. Je vais les inviter à dîner pour demain.

Mme. Babette. Cuic! J'ai peur! Vous savez, Robin, un dîner pour tous ces oiseaux, cela c'est trop cher. Au lieu d'un dîner, organisons un concert!

Robin. Tiens? C'est vrai Babette! Ah! Vous voici, Madame la Oie! Que vous arrivez à propos! Vous avez une plume magnifique! Voulez-vous écrire les billets d'invitation? Madame Babette et moi, nous organisons un concert. Nous voulons y inviter tous les oiseaux chanteurs.

Mme. la Oie. Certainement, Monsieur Robin. Je suis toujours charmée de vous servir.

Mme. Babette (*hochant la tête*). Voyons qui seront nos invités. Monsieur le Roitelet, Mademoiselle l'Alouette, Madame la Pie, Mademoiselle l'Hirondelle, Mon-

sieur le Serin, Mademoiselle la Linotte, Monsieur Pierrot (Moineau), Madame la Fauvette, Monsieur le Merle, Mademoiselle Mésange. Mais, j'ai presque oublié Monsieur Corbeau et Monsieur Hibou!

Robin. N'oublie pas Monsieur Geai et Monsieur le Coq.

Mme. la Oie. C'est bien, Madame Babette, je m'en vais vite écrire les invitations.

Mme. Babette. Qui distribuera les invitations, Monsieur Robin?

Robin. Le pigeon-voyageur, il est habitué à porter des messages.

Mme. la Oie. Voici, Madame Babette, tous les billets.

Mme. Babette. Je vous remercie! Robin, donne les vite au pigeon-voyageur.

Robin. J'y cours!

Mme. Babette. Veuillez-vous asseoir sur ces feuilles Madame la Oie? Vous êtes fatiguée, je suis sûre.

Mme. la Oie. Merci bien, madame.

Mme. Babette. Ah, voilà Robin!

Robin. Nos invités, viennent en masse. Les voici!

Robin et Mme. Babette. Soyez les bien venus; charmés de vous voir, cuic, cuic, cuic, cuic!

Mme. Babette. Miséricorde! J'ai oublié d'arranger les chaises!

Le Serin. Nous sommes tres bien, madame. Asseyons nous sur cette branche, mes amis.

Le Merle. Mademoiselle Alouette, voulez-vous être maître d'orchestre?

Mlle. Alouette. Je serai charmée.

M. Pierrot. Voyez ce gros champignon blanc. Il sera votre pupitre.

M. Geai. Tu-tu-tu, Madame Babette, j'ai apporté ma flûte!

M. Coq. Co- co- coquericos! Bravo! moi, je suis armé de mon clairon.

M. Hibou. Crin, crin, crin. Ah, et moi, je vais racler du violon — tzine, tzine, tzine!

Mme. la Pie. Boum, Boum, Boum, je battrai du tambour, pan, pan, rataplan! boum!—brr—brr—oum!

Mlle. Mésange. Oh! mes amis, quel fameux vacarme. Qu'il fera beau de s'égosiller à plaisir!

Mme. Fauvette. Ecoutons le Corbeau! Il récite!

Maître Corbeau. Maître Corbeau sur un arbre perché, tenait en son bec un fromage—

M. Rossignol. Maître, vous faites trop de coac, veuillez bien vous taire!

Que voulez vous chanter, Monsieur Loriot?

M. Loriot. Les cerises que j'aime tant!

Mlle. Hirondelle. Et moi, je veux chanter une romance en l'honneur de l'aubépine. J'aime tant ces jolies fleurs blanches au printemps et ces petites baies rouges en automne!

Robin (*d'une voix effarèe*). Sauve qui peut, mes amis! Voilà l'ogre.

Tous les Oiseaux. Aïe, aïe, j'ai peur, j'ai peur!

L'Épervier. Hourra! hourra—ra! Quel bon souper je ferai là.

Le Hibou. Vlan! (*Il applique avec son violon un coup sur la tête de l'Épervier qui tombe à terre.*)

Mme. Babette. Ah! mes amis, mes amis, le Hibou l'a tué.

M. Loriot. Mon pauvre héros, vous avez perdu vos lunettes!

M. Hibou. N'importe! voici, la lune. Je vois très bien sans lunettes.

M. Rossignol. Chantons, chantons, maintenant, notre Romance nocturne.

Art: Illustrations of all the subjects of study in clay, painting, and drawing.

Cooking: (See Miss Cooke's Outline.)

Physical Training: (See outline for First and Second Grades.

Music: (THIRD GRADE.) The Third Grade children who sing rote-songs more easily than the Fourth Grade, were far less suc-

cessful in composing, though they produced little tunes readily at the first trial. The effort to secure more original expression will be made chiefly by means of the study of texts of different kinds. The observation of the rhythmic elements of their own songs, together with the necessary notation, continues. The following texts may be used:

Fairies' Song

By the moon in sport and play,
With the night begins our day.
As we frisk the dew doth fall,
Trip it, little urchins all.
Two by two and three by three
All about, about go we.

—OLD ENGLISH.

Mix a Pancake

Mix a pancake,
Stir a pancake,
Drop it in the pan;
Try the pancake,
Toss the pancake,
Catch it if you can.

—CHRISTINA ROSSETTI.

Sleepy Head

Come, sleepy-head, rise,
And open your eyes;
The clock has struck eight,
And for school you'll be late,
So, my sleepy-head, wake!

Hush-a-bye Baby

Hush-a-bye baby in the tree-top, etc.

Songs: *Pussy Willow's Secret, Fairy Folk,* Songs of Life and Nature; *Spring's Coming, The Naughty Brooklet,* Modern Music Series, First Book.

(FOURTH GRADE.) The children in the Fourth Grade, who were apparently not ready for the original work planned last quarter, have begun to find much pleasure in it now. All attempts to write texts were so unsatisfactory that this part was abandoned, and verses were suggested by the teacher. There had been a beautiful snowstorm during the morning the work was taken up for the first time, and large flakes were still drifting slowly past the windows. Some conversation about the differences in snowstorms led up to quotations about snow. The suggestion that we might sing them was quickly adopted—a text was chosen, and soon most of the children were humming intently. Presently a decidedly tuneful phrase could be distinguished, which was immediately written upon the board, and the other three lines followed quickly. (See page 680, No. 1.) This success encouraged the rest to believe in their own powers. Another text was chosen, and the melody was begun by the same child who composed the first one. Line after line was added by different children, until the somewhat unusual tune, full of musical ideas, was finished. (See p. 680, No. 2.) There was some dissatisfaction in regard to the line, "Ah, but the boys are glad," but no better way was forthcoming, and the octaves at the end were suggested as a relief, "to make it jollier." The two songs were completed in thirty minutes.

Their next effort was a patriotic song, in which the influence of our present ideal of national songs was clearly shown.

Songs: *Pussy Willow's Secret, Fairy Folk,* Songs of Life and Nature; *Spring's Coming,* and Two-part Round, *Sicilian Mariner's Song,* Modern Music Series, First Book.

Fifth Grade

Clara Isabel Mitchell

Cooking, weaving, wood-working, clay-modeling, drawing, and painting continued through the month of February, as throughout the entire year. In connection with the history lessons, experiments with primitive spinning were added, also the binding of the story-book, printed and illustrated for the children of the lower grades.

Cooking: The cooking during the month of February followed exactly the plan outlined in the COURSE OF STUDY for that month. Every individual in the class has made the whole of each recipe with success, and several members of the class have carried out the same work at home.

The time devoted to the cooking is an hour and a half a week, all in one lesson. The apparatus used is a small gas stove on an ordinary kitchen table.

The standard of order proposed for the cooking class is that of mutual helpfulness, and no rules for quiet have been insisted upon, further than that there should be no disturbance, and no distraction from work. Interest has been constant, as marked with the boys as with the girls—and apparently not wholly for the thought of the pleasure of eating the finished product, because in most cases the enthusiasm is greatest when the cooking is done for some one else. Parents and friends have done much to encourage this spirit in the work by their appreciation of the dishes given them for testing.

At the close of each cooking period the children record their experiences in a writing lesson which helps to fix the recipes in their memories, and gives an opportunity for practice in making clear, concise statements of experience.

Reading done in connection with the lessons has been from Stories of Industry: *Sugar*, *The Making of Sugar Candy*, *Corn*, *Wheat and Meadow Grass*.

Weaving: The weaving of cushion-covers and of the curtain has been going on throughout the month of February, and will continue until finished. Many of the class have finished work-baskets of reed, and have lined them with silk.

Wood-Sloyd: Window-boxes one foot wide and one foot deep, made in length to fit the window, have been finished in February, the whole class being represented in the work of constructing the two boxes, each child having done a part of it.

The plan for the loom was made in the study of the large loom in operation. While weaving was going on, each child was asked to make on paper a sketch of that part of the loom which he considered most essential to the process. Different parts were selected by different children, the sketches were compared and discussed, and finally it was decided that the harness was the most essential part of the mechanism. Other parts were then considered in order of importance, and a simple loom is being planned.

Book-Binding: The story of Rip Van Winkle, written by these pupils for the pleasure of younger children of the school, will be printed and bound. The material used will be straw-board, binders' lining paper, and vellum. The leaves of the book are to be folded for sewing in sections. Covers will be made of two thicknesses of straw-board glued together. The book will be sewed, backed, covered with vellum, and decorated by the children in their own designs, with Higgins' colored inks.

Clay-Modeling: Rip Van Winkle has been the subject for clay-modeling, the children following their own conceptions.

Drawing and Painting: Painting of landscapes, as described under "Science," has been part of the work of each week. Illustrations of the story of Rip Van Winkle have been drawn in pencil and with colored chalks; they have also been painted in water-color for the picture-book.

Drawing of mountains, valleys, and rivers has been a necessary part of the lessons in geography, as a means through which the children may express their ideas to each other and to the teacher.

For Valentine's Day the pupils decided to make valentines for the Kindergarten, and selected Mother Goose rhymes as appropriate subjects for illustration. A drawing in colored crayons on a sheet of gray paper, three by two feet, was made by each child. The preliminary sketches on paper were carefully criticised by the head of the art department before the drawings were begun on the large sheets, and the plan proved helpful and economical.

Suggestions given were made not so much by the teacher's drawing as by insisting that the people of the pictures should be made to look as though they were really doing the things told about in the story. Encouraged in this way, the children found it necessary to pose themselves, and thus get the feeling of the act they were expressing, or to ask another member of the class to assume the pose while they studied it.

The motion of giving the pictures to the Kindergarten lent special interest to the drawing and was a large element in its success. The same sorts of pictures were drawn for the celebration of Washington's Birthday, different scenes from his early life being selected by the children for illustration.

Science: The science study, growing out of the cooking problems, has been chiefly the treating of starch with iodine; examination for starch grains under the microscope, both before and after boiling, making the iodine test for starch in the common vegetables, fruits, and grains.

The work in meterology outlined for the month has been carried out, and the painting of the landscape made each week.

As a help to the work in the evaporation of water and its relation to heat, an experiment was made in the laboratory, in the boiling of water. The problem to be investigated was how water evaporates.

A glass beaker half full of water was held over a flame. The points noted in the experiment were (1) that changes in the water took place instantly after it was placed over the flame; (2) that small bubbles rose from the bottom of the heater (the class was told that these bubbles contained air); (3) that the bubbles grew larger and rose faster as the temperature of the water increased; (4) that vapor rose from the surface of the water; (5) at about a temperature of 212° F. the surface of the water was broken by the large rising bubbles, and that a cloud of vapor rose from the heater; (6) that this vapor could be collected on a cold plate, and would then re-form in drops of water.

The children were told that this change in the form of water from liquid to gas, into vapor, and back to drops of water, is called a physical change, and they saw that heat was the cause of this physical change.

Drawings were made to illustrate this experiment, and to indicate as clearly as possible the changes which took place at different stages in the evaporation. Written records were also made.

Arithmetic: In continuing the subject of evaporation, which was begun in February, the children will be asked to compare amounts evaporated both fractionally and in the language of percentage. As few of the class will understand the principles of percentage, the subject will be developed and taught at that time.

The class will be told that it is common to speak of $\frac{1}{100}$ of any thing as 1 per cent of it, and that it is usually expressed by the sign 1%; $\frac{2}{100}$ of the water in the experiment is 2%; $\frac{3}{100}$ of the water is 3%, and so on to $\frac{100}{100}$. Any number of per cents of anything means always that number of hundredths; and the number or quantity so referred to is thought of as divided into 100 equal parts. To illustrate, a square will be drawn on the blackboard, divided into a hundred equal squares; ½ will be seen to equal 50%; ¼, 25%; ¾, 75%; $\frac{1}{10}$, 10%.

Thirds, fifths, sixths, sevenths, twelfths, sixteenths, eighths, ninths, fifteenths, fourteenths, twentieths, twenty-fifths, and fiftieths will be found, and expressed in the language and with the sign of per cents. Parts of the dollar will be expressed as per cents of the whole; numbers of centigram and decigram weights used in cooking will be compared to the whole gram in terms of percentage.

In order that the idea of per cents may not be too exclusively associated with the diagram, the dollar, or the metric weights, the children will be asked many quick, simple questions, calling for per cents of feet, yards, gallons, quarts, ounces, pounds, and all other familiar units of measurements. They will at that stage be able, no doubt, to state in the language of percentage parts and comparisons of water evaporated in the experiments.

Addition and subtraction of decimals will be involved in the comparison of per cents. If these processes are not understood and intelligently done, the principle of decimal notation will be simply told and explained: that numbers of whole things or units are expressed by figures immediately to the left of the decimal point—that that placing is an arbitrary matter, planned for convenience; that tenths, hundredths, thousandths, and other decimal parts are expressed by the figures to the right of the point.

By expressing the values of parts of the diagram, cents in a dollar, centigrams in a gram, and other actual things, the children will become accustomed to the decimal scale and will appreciate so clearly the relations of tenths and hundredths to the unit that the operations of addition and subtraction of decimals will offer no difficulties as they present themselves in the problems.

History: The history lessons outlined in the February COURSE OF STUDY will be continued into March, and possibly into April.

The work will begin with a resumé of the children's experiences and observations on the occupations of our people. It will be carried on as a study of occupations, with questions as to the meaning and use to society of these occupations. The teacher's part in the work will be the presentation of problems; the children's will be an attempt to answer. It is hoped that the result will be added interest on the part of the children in industries, and an awakening sense of the social life of our own time. In the development of this idea, appealing to the children's interest in cooking as an activity in which they are engaged, and from which they receive much of their experience, they will be asked:

1. What do the people in this country cook? 2. To what kinds of places could you

go, everywhere, to find cooking being done? 3. Why is all this cooking done? 4. How is it done? 5. From what sources are the fuels obtained? 6. Where should we go to find the people who are engaged in getting the fuel? 7. What are the sources from which the food materials are obtained? 8. Where should we go to find the people producing these things? 9. How are they transported? 10. What people are required in order that these things may be transported from the producer to the consumer?

These questions, and others which are similar, will be asked, until the children are reminded of the armies of people at work in the world, workers skilled and unskilled. They can be shown that a large part of society is engaged in the work of producing food, shelter, and clothing. They will be asked if people have always done these things, and worked in exactly the same way.

1. How did people get their tools with which to work? 2. Who thought about the factories, mills, cities, railroads, banks, offices, and buying and selling? 3. Have they always been in our country, or how did they begin?

By means of stereopticon views and pictures the children will be helped to an image of the great geographical regions of our country—the Rocky Mountain highland, the Mississippi Valley, the Appalachian highland, and the Arctic plain. The questions will then be:

1. What kind of houses would savages naturally build in each of those regions? 2. What would the food be? 3. What the clothing?

For better understanding of life among the Indian tribes, it has been decided to study the Iroquois, Pueblos, Cliff Dwellers, and Eskimos. Beginning with the Iroquois, we shall have pictures of the region occupied by them before the settlements of white people.

1. What places would these people naturally select for homes? 2. How would they build their houses at first? 3. With what implements? 4. Of what materials? 5. What would their food be? 6. Clothing? 7. Then what would be their earliest occupations? 8. What dangers threatened? 9. What means might be taken for protection? 10. What implements would be used? 11. What method of warfare? 12. What leadership? (Read descriptions of Indian life in *Indian History for Young Folks*, by Francis Drake.) 13. What skill in agriculture is required for the raising of corn? 14. Why were the Iroquois not shepherds? 15. Farmers? 16. What would have been the history of farms planned among savages in the Mississippi Valley? 17. What protection could be planned for the Iroquois family? (Read descriptions of stockade and long house.) 18. How could food have been cooked? 19. What might have been used for dishes? Clothing? 20. How might these have been ornamented?

A visit must be made to the Columbian Museum to learn the styles, patterns, and colors of Indian ornaments, and to know more of their culture and skill in the arts.

To get an insight into the religion and mythology of the Indians, the children will be asked to give their own ideas as to how the Indian must have felt toward the great phenomena of nature: the thunder, lightning, storm, rain, snow, frost, heat; the sun, moon, stars, wind, earth, air, plants, and animals. They will be encouraged to make pictures to illustrate their own ideas of these possible myths, and to write them as stories. After this they will read selected portions from Mrs. Emerson's *Indian Myths*, and from the *Reports of the Bureau of Ethnology*.

The question of leadership, and the necessity of some form of government, will be discussed, and different methods of choosing and organizing will be compared. Facts in regard to the organization of the Iroquois nations will be learned by reading from Drake, from the *Ethnological Reports*, Vol. V, 1–5, 7–10, 13–15, and from Fiske's *Discovery of America*, Vol. I.

Throughout the course of lessons the children will be making attempts at the same primitive arts as those about which they are studying. They will make baskets, line some of them with clay, and test them in fire; model simple dishes; make pouches, belts, or other small, useful articles of leather; spin with the spindle; weave in the Navajo style; make miniature long house and stockade; dress an Indian doll; and draw, paint, and model to illustrate Indian life, myths, and literature.

The study of the Pueblos, Cliff Dwellers, Mound Builders, and Eskimos will be taken up in the same way, and according to a similar plan.

Geography: (WALLACE W. ATWOOD.) The work in geography followed the general plan outlined in the February number. The aim was to add as much as possible to the images which the children had of the North American continent, and to emphasize the relation of man to his environment.

This study was carried on largely through the use of pictures and stereopticon views. When a mountainous region was taken up for consideration the children were encouraged to imagine themselves wandering among the mountains represented on the screen before them. An imaginary day's journey was made to the top of some high peak. The scenic features were noted, the changes in vegetation, with increase in altitude, the tree line, the broken or angular condition of the rock near the summit, the snow-cap, and small glaciers, all discovered by the pupils.

The discoveries made in such a trip called forth a great many questions. The children wanted to know the explanation of what they saw, and numerous discussions arose. Thus, a child, noticing that the mountains before him were made of great layers of rock, asked how the layers all got there, and of what they were made. Such questions are all that is needed to set the whole class at work to enlighten the ignorant member. The lesson which follows is not a short one, and it may take several periods before the story of the sandstones, limestones, shales, and conglomerates, from the time when the materials were deposited in the sea, through the period of uplift and sculpture, is worked out by the class.

Some child is sure to see the loose material at the base of the precipices, and another question suggesting the story of weathering and erosion is before the class.

One after another come the queries which lead to as full a study of the physical aspects of the region as is deemed advisable. Then if the student imagine himself settling in such a region, problems arise as to where to build his house, and of what material; what food would be available; what clothing; what occupation might be pursued, where towns or cities would develop in such a region, if at all; what time would be left for study and culture.

During the month of March in correlation with the work in history, New York State and the Mississippi Valley will be studied as the home of certain tribes of the American Indians, and the southwest portion of the United States as the home of the Pueblo Indians and the Cliff Dwellers.

Speech, Oral Reading, and Dramatic Art: Indian myths will be read, studied, and possibly dramatized, as suggested in the Fifth Grade outline of the February COURSE OF STUDY. Scenes illustrating Indian life will be represented by the children as the lessons and discussions develop. Occasion for the presentation of dramatized story or lesson is furnished by the morning exercises and grade entertainments, in which one class is invited to visit another. At these times the class which is to entertain other people may choose a story they have studied, discuss the method of giving it, plan staging and costumes, and write dialogue.

For example, the class studied Irving's *Rip Van Winkle* in January, with Miss

Martha Fleming. The story was first read to the class by the teacher, who then asked what parts of it would make good pictures. Each child told the part of the story which appealed most strongly to him, and was allowed to make a drawing of it on the blackboard. The children were interested in their own pictures, and urged the head of the art department to make a drawing for the room. They then asked for materials like those used by the art teacher, and made large drawings on gray paper, with colored crayons.

The teacher then suggested that they tell the story to people who would enjoy it, and the class decided to write the story, carefully illustrate it with drawings or water-colors, bind it, and give copies to the lower rooms as story-books.

In answer to Miss Fleming's question as to whether there were any other way in which the story might be entertaining if told, the children proposed dramatization and modeling in clay. As the entire class was enthusiastic in the desire for both these means of expression, Miss Fleming encouraged a short discussion as to ways of making scenery, getting up costumes, and writing the play. She asked for the list of characters needed, and the scenes which should be represented.

The class was then divided into committees which were to make plans and report on the preparation necessary for giving the play. These committees reported on scenery, costumes, and appearance of characters, even to the dog; preferences were given as to who should take each part, and as to who should write the speeches for the different characters.

These reports were discussed, commented upon, criticised, and finally made over and corrected until all stood as approved by the class. The play then will be the children's own idea expressed in their own way.

The teacher's work in giving the play will be to encourage freedom and naturalness of expression, clear enunciation, and to insist upon effective staging. This will be done by holding the children to the ideal of making the story clear to the audience.

The committees decided to indicate the Catskill scenery by means of large drawings in colored crayon; the costumes were to follow descriptions in the book as closely as possible, and to be picked up at home or made in school, each child furnishing material for his own. The part of the dog, Wolf, to be sufficiently intelligent, was to be enacted by one of the children covered by a fur rug, the tail operated by a string.

The scenes chosen were: I. Rip at home. II. Meeting the dwarfs in the mountains. III. Waking after the sleep, and return to the village. The characters were: Rip, the dog, Dame Van Winkle, Hendrick Hudson, a few dwarfs, a few children, an innkeeper, two or three men, and Rip's grown son and daughter.

Music: Individual singing, begun last month, will be continued as a means of further development of independent self-expression. Original work will be attempted. (See other grade outlines.)

The following verses will be given to the children from which to choose:

Our Heroes

We love the heroes of our land,
Whose names shall live in story;
The wise in heart, the strong of hand,
Whose life and death were glory.

The Blacksmith

Success to the smith in his forge!
Long life to the smith in his forge!
Sing, all ye good fellows,
Tongs, hammer, and bellows,
Hurrah for the smith in his forge!

A Song of Praise

Let us with a joyful mind
Praise the Lord, for He is kind;
For His mercies shall endure,
Ever faithful, ever sure.

Song of Labor

Labor's strong and merry children,
Comrades of the rising sun;
Let us sing some songs together,
Now our toil is done.

Texts are selected for various reasons; in all cases the first requirement is perfect simplicity in the form; in some the subject may seem valuable enough to outweigh considerations of literary value; in some an idea vividly and tersely expressed, or a verse having a rhythm plainly suggestive of melody, decide their usefulness. A better understanding of the value of the music and its place in relation to the words will come from attempts to put them to music. Various facts in regard to the appropriateness of the melody will come to light, which will add to general musical intelligence.

German: (Dr. Benignus.) In order to effect a close correlation of German with the other subjects of instruction, and to teach German as English is taught in the Institute, the study of mountains has been selected for this month. With a view to object-teaching, the pupils have learned, under the direction of the teacher of geology, to read from pictures, and to compare the observations thus made with those of their field-trips. The aim has been to have the pupils use the results of their field-trips as a key to the history of the regions shown in the pictures. The following questions and answers, adapted to the ability of the pupils, will serve as reading matter and suitable exercises in conversation:

Betrachtung über die Bildung von Gestein und Berg

Die Schüler sehen, dass die Gesteine in Lagern sind. Was heisst das? Wie entstanden solche Lager? Die Schüler bemerkten auf den Klassen-Ausflügen, dass verschiedene Stoffe in den Michigan-See geschwemmt wurden. Man kann daraus schliessen, dass auf dem Grunde der Seen und Meere Schichten entstehen. Diese Ablagerungen können Gesteine werden, wenn sie verhärtert sind. Bei einer Exkursion nach den Dünen am Michigan-See im vergangenen November hatten die Schüler Lager gesehen. Aber diese Dünenlager sind verschieden von den Gesteinslagern. Es scheint somit, dass die Gegend auf dem Bilde einst im Meere war. Was geschah in jener Zeit? Das Meer muss zurückgetreten sein. Wie sah die Gegend aus, als das Meer zurücktrat? Wie würde der Grund des Michigan-Sees aussehen, wenn man das Wasser ablassen würde? Die Gegend von Chicago war einst unter Wasser. Sie ist flach. Aber wie entstanden Berge aus flachem Land? Der Regen fällt auf das Land und bildet Rinnen oder kleine Thäler. Diese Thäler werden länger, tiefer und breiter. Sie trennen das Land in Hügel und Berge.

Die Berge waren nicht immer da. Werden sie immer bleiben? Was kann man täglich an ihnen sehen? Was bedeutet das lockere und lose Material am Fusse der Berge? Wie kam es dorthin? Der Wind, der Regen, der Frost und der Schnee machen allmählich den Stein brüchig und locker, so dass er niederfällt. Der Berg wird mit der Zeit ein Hügel. Aber was wird mit dem ganzen Material, das an den Seiten der Berge herunterkommt, und das die Flüsse mit sich in das Meer führen?

Dieses Material bildet wieder Schichten oder Ablagerungen im Meere. Mit der Zeit erhebt es sich. So ist das Land immer in Veränderung. Berge werden gebildet und wieder zerstört.

As indicated in the February number of the COURSE OF STUDY, to avoid the tendency of the beginner to overcome his difficulties in reading German by cramming with words and incoherent phrases, and to make reading interesting in class and at home, the books named below have been ordered:

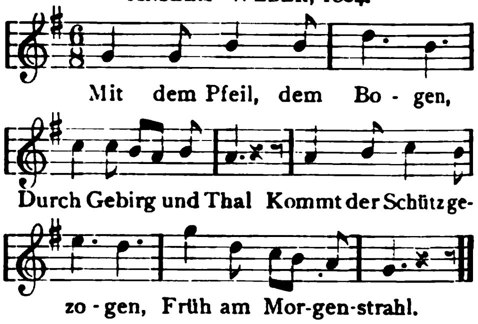
Bilder aus dem Tierreiche, and *Für kleine Tierfreunde*, published by I. F. Schreiber, Esslingen and München; *Im Tiergarten*, and *Bilder aus der Tierwelt*, published by Karl Hirsch, Konstanz and New York; *Der gestiefelte Kater*, published by Theodor Ströfer, Nürnberg; *Märchenstrauss für die Kinderstube*, published by Wilhelm Nitzschke, Stuttgart: Contents: *Aschenbrödel*, *Goldtöchterchen*, *Das dankbare Zwerglein*, *Das Waldfräulein*, *Dornröschen*, *Der Mann im Mond*, *Hänsel und Gretel*, *Frau Hütt in Tyrol*, *Die Lilienfee*, *Das Thränenkrüglein*, *Die Sternthaler*, *Das Weihnachtsengelchen*.

Although these books are moderate in price, their illustrations are artistic in execution and appropriate to the text. The attractive little stories they contain will be sure to please.

As to memorizing, little Walter's *Schützenlied* in Schiller's *Tell* was begun in February. It will be finished and sung to the well-known melody of Anselm Weber.

Schützenlied

ANSELM WEBER, 1804.


Mit dem Pfeil, dem Bo - gen,
Durch Gebirg und Thal Kommt der Schütz ge-
zo - gen, Früh am Mor-gen-strahl.

Wie im Reich der Lüfte
König ist der Weih—
Durch Gebirg und Klüfte,
Herrscht der Schütze frei.

Ihm gehört das Weite;
Was sein Pfeil erreicht,
Das ist seine Beute,
Was da fleugt und kreucht.

Friedrich von Schiller.
"Wilhelm Tell," III, 1; 1804.

All the pupils of the Grammar School will be taught the simple and touching song (Morgenlied), *Die Sterne sind erblichen*, of Heinrich Hoffmann aus Fallersleben, set to music by Joseph Gersbach. Both words and music may be found in this number of the COURSE OF STUDY on page 678.

Sixth Grade

Edith Foster Flint

History: The subject for the month is the Crusades — the movement which contributed so much to the rise of the Italian cities.

I. The topic will not be taken up in separate divisions, such as *The First Crusade, The Third Crusade, The Children's Crusade,* and so on, but will be treated as a whole, as a great movement which agitated all Europe between the eleventh and the thirteenth centuries, and exercised a profound influence on the politics, commerce, intellectual development, and ethics of the West.

II. Besides inquiring into the causes, the nature, and the effects of the Crusades, the children will study the subject of religious pilgrimage in general, in which they will have an interest because of their acquaintance with Benares and Mecca; and through following the route and adventures of a typical mediæval pilgrim to Jerusalem they will arrive at a conception of the world at that time, both intellectual and physical, and will get a standard for judging the achievements of modern civilization. A scene from *Ivanhoe,* in which the palmer returning from the Holy Land is entertained at Cedric's table, may aid in reinforcing images here.

III. It will be necessary, also, to touch the matter of feudalism, because of its connection with the Crusades themselves, and with chivalry, on which the greatest emphasis will be laid.

It is believed that through a study of chivalry and what it meant to the world, in religious zeal, in respect for women, and in aid to the weak and oppressed, the children will arrive at much that will be in the deepest sense educative. And in connection with the ceremony of knighting, with the tournament, and with knightly deeds, there is a wealth of material, both literary and artistic, which should make the subject very valuable. Thus the tournament from *Ivanhoe,* the exchange of courtesies between Richard and Saladin from *The Talisman,* the story of the *Holy Grail, The Vision of Sir Launfal,* and *The Happy Warrior* will add much to the children's conceptions, while Watts's *Sir Galahad,* Carpaccio's *St. George and the Dragon,* and other famous representations of chivalric ideals will reinforce on another side.

References: Fiske, *The Discovery of America,* Vol. I, p. 270–76; *Encyclopedia Britannica;* Myers, *Mediæval and Modern History,* p. 179–221; Bulfinch, *Age of Chivalry;* Boutell, *Arms and Armor of the Middle Ages;* Gautier, *Chivalry;* Hallam, *Middle Ages,* Vol. I; Scott, *Ivanhoe, The Talisman.*

Science: The subject is WOOD.

I. The children will first be led to recall the uses of wood with which they are familiar—as its use for fuel, for building material in houses, cars, carriages, for parts of machinery, for furniture, and for decoration.

II. Then will come the consideration of the kinds of wood which they know—probably pine, oak, maple, walnut, birch, curly birch, bird's-eye maple, cherry, and mahogany—and of the different places where each kind is in use.

III. The discussion as to why different kinds should be used in different places will lead to the study of qualities—durability, weight, flexibility, beauty, and expense.

1. Through discussion and the examination of pictures and specimens will be determined the factors on which these qualities depend, *i.e.,* the kind of tree, the individual tree, the part of the tree taken—whether butt-log or top-log, heart-wood or sap-wood—the situation of the tree, the time of year the wood was cut, the way it was sawed, the way it was dried.

2. This will be followed by a consideration of the qualities requisite for different uses. That is, for use in carpentry wood must be of a certain size, to avoid waste of labor and material in cutting; it must be easily worked; be light, firm, and insect-proof; and must season without warping. The cabinet-maker, on the other hand, demands greater hardness; fineness, and beauty of grain; ability to take a polish; toughness, and strength. Here comes in the subject of veneering, with its advantages—less expense and less weight, and the obtaining of rare grains. And its disadvantages— insincerity and lessened durability.

IV. All this, however, would hang in the air if we did not go back to the tree. The stages in the history of a piece of wood will therefore be studied.

1. Portions of a tree-trunk in longitudinal section and in cross-section will be examined, and the markings showing yearly growth noted.

2. Knots will be studied and accounted for.

3. The cell structure of various woods—coarse-grained, hard and soft—will be examined with the aid of the stereopticon, and the effect of cell-structure on the value of wood explained.

4. The environment of the tree will be studied with a view to determining its effect on the strength, durability, and flexibility of its timber.

5. Finally, the class will follow the wood through the processes of chopping, transportation, sawing, and finishing. They will visit the Field Columbian Museum, and if possible, the Pullman shops, Tobey's, Colby's, or Lyon & Healy's.

Sloyd and Number: The Sloyd and number work will correlate readily and valuably with the subject of wood. Such problems as the following, for instance, will be dealt with:

1. The width of an annual layer of one pine-tree was found to be 1/6 of an inch; of another 1/8 of an inch. (a) How much more did the first grow than the second? (b) What per cent of increase had the first over the second?

2. One annual layer is 1/18 of an inch wide. This is 50% of the growth of another. Find the annual growth of the second.

3. The zone of sap-wood in a certain spruce log is 3 inches wide. The diameter of the log is 15 inches. Find area of heart-wood.

4. A piece of oak weighing 86 pounds, when soaked one week weighed 126 pounds. (a) How much did it gain? (b) What per cent?

5. Cherry weighing 73 pounds, when soaked a week weighed 108 pounds. (a) How many pounds were gained? (b) What per cent? (c) What per cent did the cherry gain over the oak?

6. Pine weighing 46 pounds, when soaked a week weighed 72 pounds. (a) What was the gain per cent? (b) Which gained the more, the cherry or the pine? (c) How many per cent more?

7. The woodland area of the United States now covers 450,000,000 acres. What per cent is it of the whole area?

8. Of these forests not less than 25,000,000 acres are cut over annually. If there is no replanting, in what time will this rate of destruction bring our forests to an end?

9. How much will a cork-tree yield in 150 years, if it yields 2,000 pounds every 8 years?

10. In the year 1867, 558 tons of rosewood were imported into Great Britain, half of which sold at 5 cents per pound, and the rest at 10 cents per pound. Find value of the wood.

11. What would a pine sidewalk cost on two sides of a block 600 feet long, sidewalk to be 10 feet wide, lumber used to be 9 inches wide, and to cost $16 per M feet?

References: U. S. Government Report on *Woods*; *Encyclopedia Britannica*; Stilwell, *One Year in the Eighth Grade*, pp. 39-40.

Geography: In this grade some difficulty has arisen through the attempt to correlate the history and geography closely. To teach the subject of Italy individually, for instance, before teaching that of Europe as a whole, is not possible. Therefore it has seemed best to transpose the original order of subjects planned, and to defer the study of Florence and Venice, together with that of Italy, until after Europe as a whole shall have been taken up. The history in correlation will be that of the Crusades—a movement affecting well-nigh all of Europe. The effort will be to present Europe as a whole in large outlines, emphasizing those portions of the continent which the Crusaders crossed on their journey to the East, as, for example, the valley of the Danube.

I. The children will first observe the relation of Europe to Asia, and note the geographical fitness of the term "Eurasia." A typical landscape in Greece, and one in Asia Minor, will be described and illustrated by pictures, that the great similarity may be quite obvious.

II. Then the more conspicuous facts of outline will be observed—the four peninsulas—Scandinavian, Spanish, Italian, and Balkan—and the great length of coast-line as compared with area noted. The children will, of course, be led to consider the historical effect of this coastal length, and their speculations will be tested and verified. The fact that this length is due, not to minor indentations, but to the presence of large inland seas, will be dwelt upon, and its commercial importance brought out.

III. Next, the regions of highland and lowland will be located; the former comprising Scandinavia, and, roughly, the Alpine region; the latter comprising the section between these two, stretching from the Bay of Biscay, the English Channel, and the North Sea to the Ural Mountains, and spreading out in Russia from the Black Sea to the Arctic.

1. The principal mountain chains of the southern highland region will be studied—the Alps in the center of the region, the Carpathians in the east, the Balkans in the southeast, the Apennines in Italy, and the Pyrenees between France and Spain.

2. Closely associated with these will be the study of the principal river-valleys—those of the Danube, the Po, the Saône and Rhone, and the Rhine.

3. Lastly, the situation of mountains and seas with reference to climate will be studied, and the conditions as compared with those of North America, of China, and of India, considered.

Throughout the study the children will have constant recourse to sand-modeling and chalk-modeling (in both of which they are now gaining some proficiency), and to the stereopticon.

References: *Encyclopedia Britannica*, Vol. VIII, p. 680–92; *The International Geography*, pp. 123–137; Bartholomew, *Atlas of Commercial Geography;* Reclus, *A Bird's-Eye View of the World*, pp. 17–28.

Painting: The children will represent knights, tournaments, knightly episodes met with in their reading, feudal castles, and other matters connected with chivalry.

Modeling: Many of these same subjects will lend themselves to representation in clay.

Music: Individual singing, with and without accompaniment, will be continued. Ability to convey the ideas and feelings of the song will be the chief point considered, and the criticism of the class will be asked. Two-part songs will predominate, and original work will be attempted. Verses from Kipling's *White Seal* have been selected by the class for their first song. For further choice of texts see Fifth Grade outline.

Songs: *Pussy Willow's Secret*, Songs of Life and Nature; *Hunter's Song*, Modern Music Series, Second Book; *March*, Modern Music Series, Third Book; *Sword Song*, *King Richard Lion Heart*, Songs of Life and Nature.

French: (MLLE. ASHLÉMAN.) Dramatic incidents in connection with the beginning of the Crusades will be adapted from the best French authors and represented by the children.

In the writing, memorizing, and acting out of these incidents, the children's attention will turn to the nature and mechanism of the language, and they will wonder at changes in words, particularly adjectives and verbs, and wish to know the reason for these changes in form. The grammar may now enhance the language. Each need should be responded to as it arises. By these comparisons general and practical grammar may be taught. The acquisition of French will then also facilitate the learning of English.

Une Après-Midi Chez Fadette

(Scène: Une chambre avec une fenêtre qui donne sur la rue. Fadette et Lucile à la fenêtre.)

Lucile. Quel mauvais temps! Regarde donc comme il pleut! Nous ne pouvons guère sortir cette après-midi!

Fadette. C'est vrai. Voilà, regarde la pendule; il est déja quatre heures moins quinze. Retire donc ton manteau et reste. . . .

(*Madame Lemaître entre dans la chambre.*)

Mme. Lemaître. Lucile, il pleut si fort, que j'ai téléphoné à votre mère pour lui demander la permission de vous garder chez-nous jusqu' à demain matin.

Lucile. Que vous êtes aimable, madame! Merci pour votre gracieuse invitation.

Fadette. Voyons Lucile, asseyons nous dans ce fauteuil et causons. J'ai une confidence à te faire, quelque chose qui me contrarie beaucoup.

Lucile. J'espère que ce n'est pas grave.

Fadette. Oh, non, pas cela, mais tu sais, Lucile, que les Croisades intéressent mes frères. Ils m'ont priée de leur dramatiser quelques scènes. Nous voulons les jouer à la fête de Papa au mois de mai. C'est bien difficile à faire!

(*On entend du bruit dans le corridor. Les garçons entrent.*)

Lucile. Que vous arrivez apropos! Qui joue la première scène, Fadette?

Fadette. Jean et Henri. Scène à Jerusalem. Jean, voici votre costume. Vous êtes le terrible Hakem, Khalife d'Egypte. Vous persécutez les chrétiens à Jèrusalem. Voici aussi vos lignes. C'est ce que vous direz quand Henri, qui a le rôle d'Aladin, vient vous dire que les chrétiens s'assemblent dans le temple. Aladin, voici votre rôle et votre costume.

Les personnages dans la deuxième scène sont Pierre l'Ermite et le patriarche de Jérusalem, Siméon. Pierre l'Ermite, c'est vous, Guillaume! Vous êtes petit, et Pierre l'Ermite était un homme de très petite-stature, mais il avait l'esprit vif, l'œil pénétrant, il parlait avec facilité. Partout où il allait prècher, le peuple l'entourait en foule. Il rétablissait toujours la paix et la bonne intelligence. Voici votre costume: une tunique de laine, pardessus un manteau de bure, les bras et les pieds nus.

Maintenant, Pierre, vous serez le patriarche de Jérusalem, Siméon. Voici votre costume. Pierre l'Ermite est venu à Jérusalem faire ses prières, il vient vous voir, vous reconnaissez en lui un homme d'expérience. Voici votre discours.

J'ai encore une scène. Celle-ci se passe à Clermont en Auvergne. Ce sera le Grand Concile. Lucile, vous serez le pape Urbain II. C'est vous qui presidez le Grand Concile, montée sur une estrade au milieu d'une multitude. Pierre l'Ermite est debout à côté de vous. C'est lui qui parle le premier. Les enfants Girard et Godet, nos voisins, seront la multitude.

Je n'ai pas encore écrit "scène quatrième." Dans cette scène je compte avoir les illustres chefs des Croisades: Godefroi de Bouillon, Bohemond, et le comte Raymond de Toulouse.

Lucile. Oh, Fadette! je t'en prie commençons la répétition, tu ne nous tutoies plus; ce qui veut dire, que nous sommes de vrais acteurs, n'est-ce pas? Hakem et Aladin êtes-vous prêts?

Jean. Oui. Voilà, commence ton discours, Aladin!

Aladin. Seigneur, les chrétiens vont célébrer la Pâque, les prêtres de l'église frottent d'huile[*] la chaîne de fer à laquelle est suspendue la lampe au-dessus du tombeau de Jésus Christ.

Hakem (*avec violence*). J'ordonne la démolition de l'église du saint sépulcre, j'ordonne que les chrétiens portent au cou des croix en bois du poids de cinq livres. Je leur défends aucune monture que des mulets ou des ânes. Je confisquerai leurs biens, j'enlèverais leurs enfants!

Aladin. Au retour de l'aurore, Seigneur, un chien mort a été déposé à la porte d'une mosque.

Hakem. Ah! Nous allons accuser les chrétiens de cet outrage! Nous les mettrons à mort comme des chiens! Allez, Aladin, dites aux soldats de se préparer à exécuter mes ordres.

Lucile. Oh! C'est splendide, Fadette. Vite, jouons scène deuxième tout de suite.

Siméon. Mon pauvre ami, je suis désolé. Le spectacle de ces souffrances, de ces outrages, que subissent les chrétiens, je ne peux plus le supporter! Si l'Eglise romaine, si les princes d'Occident étaient instruits, par un homme actif et digne de foi, je suis sûr qu'ils essayeraient d'y apporter remède. Je vous supplie, Pierre, venez à mon aide!

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[*] Par le toit on mettait le feu à l'extrémité de la chaîne. Le feu descendait jusqu' à la mèche de la lampe et l'allumait. Les prêtres s'écriaient alors comme si le feu du ciel descendait sur le tombeau.

Pierre l'Ermite. Saint Père, écrivez donc au seigneur pape Urbain II, et à l'Eglise romaine, aux rois et aux princes! Moi, je ne me refuse point à m'imposer une tâche pour le salut de mon âme, avec l'aide du Seigneur, je suis prêt à aller représenter à l'Occident l'immensité de vos maux, et à hâter le jour de votre soulagement.

Siméon. Pierre l'Ermite, j'accepte votre offre. Que le Seigneur vous bénisse!

Lucile (*soupirant*). C'est moi maintenant! Ah! qu'il fait beau d'être pape quand on peut faire du bien!

Pierre l'Ermite. Le Tyran s'obstine à rejeter tous les crimes sur les chrétiens. Le doute ne fait qu'irriter sa fureur. Il oublie toute mesure, tout respect pour la justice. Les justes, les innocents tous périssent. Levez-vous, mes amis, aux armes, que la pitié de ces pauvres chrétiens vous fasse combattre pour la gloire de Dieu!

Urbain II. Hommes français, hommes d'au-delà des montagnes, nations choisies et chéries de Dieu, très courageux chevaliers, rappelez-vous les vertus de vos ancêtres, la vertu et la grandeur du roi Charlemagne! C'est de vous surtout que Jérusalem attend le secours, car Dieu vous a accordé l'insigne gloire des armes.

Prenez donc la route de Jérusalem, de cette cité royale que le Rédempteur du genre humain a illustrée par sa venu, honorée de sa résidence, signalée par sa mort. Elle vous demande maintenant sa déliverance.

Partez, assurés de la gloire impérissable qui vous attend dans le royaume des cieux!

Fadette. Dieu le veut! Dieu le veut!

German, Sixth, Seventh, and Eighth Grades: (DR. BENIGNUS.) The pupils are studying mediæval history, the Crusades, at present. German will be correlated with this study. The following outlines, serving as reading matter and for exercises in grammar, will give a survey of the participation of the Germans in the Crusades. On a map, drawn expressly for this study, the route of the German Crusaders will be traced, and the pupils will be taught the geographical features of the countries in question.

Teilnahme der Deutschen an den Kreuzzügen

Deutschland nahm anfangs nur geringen Anteil an den Kreuzzügen. Es war damals unter dem unglücklichen Franken Heinrich IV. von Bürgerkrieg und Parteiwut zerrissen. Zudem ging der erste Kreuzzug von dem Papste Urban II. aus, dem Todfeinde des Kaisers. Allerdings waren unter den Scharen, die vor Beginn des ersten Kreuzzuges ins Heilige Land ziehen wollten, auch Deutsche. Ein Haufe von mehreren tausend Deutschen sammelte sich um einen abenteuerlichen Priester. Aber wilde Mordlust bezeichnete ihren Weg am Main, Rhein und an der Donau. Und schon in Ungarn wurden die Zügellosen grösstenteils von den erzürnten Bewohnern vernichtet.

Beim ersten Kreuzzug, 1096 – 1099, kämpften meist Franzosen, Normannen und Lothringer. Erst am zweiten Kreuzzug, 1147–1149, beteiligten sich die Deutschen. Der Abt Bernhard von Clairvaux bewog durch die Macht seiner Predigt nicht nur den französischen König Ludwig VII., sondern auch den deutschen König, den Hohenstaufen Konrad III., zum heiligen Kriege. Beide Heere, zusammen 140,000 Reiter, brachen 1147 auf, das deutsche Heer etwas früher von Regensburg in Bayern, das französische von Metz in Lothringen. Der Weg ging

der Donau entlang durch Ungarn, dann durch Bulgarien nach Konstantinopel, und von dort hinüber nach Kleinasien. Das deutsche Heer, welches dem französischen weit voraus war, erlitt durch Mangel und fortwährende Kämpfe schwere Verluste. Der Rest vereinigte sich mit den Franzosen. Beide Herrscher versuchten nun Damaskus in dem damaligen Reiche der Seldschucken zu erstürmen. Aber die Einnahme der Stadt scheiterte durch Verrat. Hierauf kehrten beide Könige nach Europa zurück.

Am dritten Kreuzzug, 1189–1192, beteiligte sich Deutschland mit über 100,000 Mann unter der Führung des Heldenkaisers Friedrich I. Barbarossa aus dem Hause der Hohenstaufen. Als Jüngling hatte er den zweiten Kreuzzug mitgemacht; als Greis führte er jetzt die Seinen an. Das Heer nahm wieder den Weg der Donau entlang. Der griechische Kaiser in Konstantinopel verhielt sich misstrauisch gegen Friedrich. Aber nachdem die Deutschen die Stadt Adrianopel in Bulgarien erstürmt hatten, erhielten sie freien Durchzug und Überfahrt nach Kleinasien. Friedrich Barbarossa schlug in zwei Schlachten den Sultan von Ikonium, der damals Kleinasien beherrschte. Als er aber auf seinem Streitross den Fluss Kalykadnus überschreiten wollte, wurde er von Wellen fortgerissen. Er ertrank 1190. Sein Sohn Friedrich, der tapfere Schwabenherzog, führte das Heer weiter über Antiochien nach der Festung Akka am mittelländischen Meere. Dort traf er die Franzosen und Engländer unter ihren Königen Philipp II. Augustus und Richard Löwenherz. Aber schon im Januar 1191 starb Friedrich.

Zum letztenmal kämpften die Deutschen für das Heilige Grab unter dem mächtigen Hohenstaufenkaiser Friedrich II. Dieser hatte einst dem Papst gelobt, eine Kreuzfahrt zu unternehmen. Aber Staatsgeschäfte verhinderten den Kaiser, sein Wort einzulösen. Deshalb belegte ihn der Papst mit dem Bann. Dennoch unternahm der Kaiser einen Kreuzzug, den fünften, 1228–29. Da er sich meistens in Italien aufhielt, so brach er von der Hafenstadt Brindisi auf und kam zu Schiffe vorbei an den Inseln Kandia, Rhodus und Cypern nach Palästina. Er erlangte Jerusalem und den Besitz fast des ganzen Landes, das einst von den Kreuzfahrern erobert worden war. In Jerusalem krönte er sich selbst zum König.

The two poems subjoined are also given as reading matter and for memorizing, especially for the advanced pupils. Friedrich Rückert's *Barbarossa* expresses a passionate longing for the restoration of the German empire in its power and glory under the chivalrous Emperor Friedrich I., called Red-Beard, who was drowned in the river Kalykadnos, in Asia Minor, during the third Crusade.

Barbarossa

Der alte Barbarossa,
  Der Kaiser Friederich,
Im unterird'schen Schlosse
  Hält er verzaubert sich.

Er ist niemals gestorben,
  Er lebt darin noch jetzt;
Er hat im Schloss verborgen
  Zum Schlaf sich hingesetzt.

Er hat hinab genommen
  Des Reiches Herrlichkeit,
Und wird einst wieder kommen
  Mit ihr, zu seiner Zeit.

Der Stuhl ist elfenbeinern,
  Darauf der Kaiser sitzt;
Der Tisch ist marmelsteinern,
  Worauf sein Haupt er stützt.

Sein Bart ist nicht von Flachse,
  Er ist von Feuersglut,
Ist durch den Tisch gewachsen,
  Worauf sein Kinn ausruht.

Er nickt als wie im Traume,
  Sein Aug' halb offen zwinkt;
Und je nach langem Raume
  Er einem Knaben winkt.

Er spricht im Schlaf zum Knaben:
"Geh hin vors Schloss, o Zwerg,
Und sieh, ob noch die Raben
Herfliegen um den Berg.

Und wenn die alten Raben
Noch fliegen immerdar,
So muss ich auch noch schlafen
Verzaubert hundert Jahr."

Friedrich Rückert, 1788-1866.

On January 18th, 1871, Emperor Frederick, Red-Beard, was awakened from the sleep in which, according to the legend, he was spellbound until the German empire should be re-established; for on that day King William I. of Prussia renewed the empire as Emperor William I., in the palace of Versailles.

The end of the song must now be the following:

So hat er lang geschlafen,
Sechshundertachtzig Jahr;
Da flogen fort die Raben,
Und um den Berg ward's klar.

Der Alte ging zu Raste
Vor Wilhelms Kaiserpracht;
Statt Raben auf dem Aste
Der Adler hält jetzt Wacht.

NOTE: Kyffhäuser, in the Forest of Thuringia, to which mountain the legend of the sleeping emperor is attached, is now crowned by an imposing monument to the restorer of German unity, Emperor William I.

Ludwig Uhland's "Schwäbische Kunde" is a lively description of the heroic deeds of a Suabian knight in the struggle against the Turks on Barbarossa's expedition toward the Holy Land.

Schwäbische Kunde

Als Kaiser Rotbart lobesam
Zum heil'gen Land gezogen kam,
Da musst' er mit dem frommen Heer
Durch ein Gebirge wüst und leer.
Daselbst erhub sich grosse Not,
Viel Steine gab's und wenig Brot,
Und mancher deutsche Reitersmann
Hat dort den Trunk sich abgethan;
Den Pferden war's so schwach im Magen,
Fast musst' der Reiter die Mähre tragen.
Nun war ein Herr aus Schwabenland,
Von hohem Wuchs und starker Hand,
Des Rösslein war so krank und schwach,
Er zog es nur am Zaume nach;
Er hätt' es nimmer aufgegeben,
Und kostet's ihn das eigne Leben.
So blieb er bald ein gutes Stück
Hinter dem Heereszug zurück;
Da sprengten plötzlich in die Quer
Fünfzig türkische Reiter daher,
Die huben an, auf ihn zu schiessen,
Nach ihm zu werfen mit den Spiessen.
Der wackre Schwabe forcht sich nit,
Ging seines Weges Schritt vor Schritt,
Liess sich den Schild mit Pfeilen spicken
Und thät nur spöttlich um sich blicken,
Bis einer, dem die Zeit zu lang,
Auf ihn den krummen Säbel schwang.
Da wallt dem Deutschen auch sein Blut,
Er trifft des Türken Pferd so gut,
Er haut ihm ab mit *einem* Streich
Die beiden Vorderfüss' zugleich.
Als er das Tier zu Fall gebracht,
Da fasst er erst sein Schwert mit Macht,
Er schwingt es auf des Reiters Kopf,
Haut durch bis auf den Sattelknopf,
Haut auch den Sattel noch zu Stücken
Und tief noch in des Pferdes Rücken;
Zur Rechten sieht man wie zur Linken
Einen halben Türken heruntersinken.
Da packt die andern kalter Graus;
Sie fliehen in alle Welt hinaus,
Und jedem ist's, als würd' ihm mitten
Durch Kopf und Leib hindurchgeschnitten.
Drauf kam des Weg's 'ne Christenschar,
Die auch zurückgeblieben war;
Die sahen nun mit gutem Bedacht,
Was Arbeit unser Held gemacht.
Von denen hat's der Kaiser vernommen,
Der liess den Schwaben vor sich kommen.
Er sprach: "Sag' an, mein Ritter wert!
Wer hat dich solche Streich' gelehrt?"
Der Held bedacht' sich nicht zu lang:
"Die Streiche sind bei uns im Schwang;
Sie sind bekannt im ganzen Reiche,
Man nennt sie halt nur Schwabenstreiche."

Ludwig Uhland, 1787-1862

Seventh and Eighth Grades

Nott William Flint

Nature Study: Wood, the most widely used material in the world for purposes of construction, is the subject for the month. The class will begin with a study of the various kinds of wood used in their own room—in desks, floor, doors, casings, trimmings, etc.—and afterward of samples brought in by the teacher.

I. SELECTION OF WOOD. The question, What leads to the choice of certain woods for certain uses? will afford the class much of original thinking. What kind would you choose for flooring? for staircases? for doors and casings? for framework and joists? (Note: Wood for the framework of a house must be of special size to save waste in labor of cutting and of material. It must be light, stiff, insect-proof, able to season without warping, and easily workable; it need not have grain and color, nor need it be a wood that dresses well.) What kind would you choose for piano? For furniture? For carriages? What are the essential qualities that guide you in each choice?

II. STRUCTURE. The study of the structure of wood is by far the most important inquiry in this work, for the answers to all questions depending on this subject will be solved finally with reference to structure. It is important, therefore, that there be in the class-room boards of the staple woods—pine, oak, hemlock, willow, cherry, ash, and mahogany—together with cross-sections of the various trees, the more of these latter, the better. Let the pupils determine and note what are the essential characteristics, and what the essential differences, among all these kinds.

Such questions as these may be asked: Why is oak heavier, stronger, and tougher than pine? Why harder to cut, saw, and plane? What are knots and cross-grains, and why do they weaken timber? Why does wood sometimes check (crack) while drying? Why do some woods split easily and straight, while others curl and twist? Some kinds take on a hard, fine polish, and others finish roughly—why?

These questions would lead, of course, to a consideration of the structure of wood in trees; this study can be taken up at once, or deferred until later.

Let the children study the structure of wood as shown in some characteristic cross-section of a tree: the bark, the sap-wood, the concentric rings, the pith, and the radiating lines (medullary rays). Have them note the difference in color between the pith and the sap-wood; also what function these parts perform in the life of the tree.

A study of the annual annular growth of trees would in itself afford more than enough work for the month. What does the class think the rings are? Why are some rings thicker and some thinner than the average? Why is the pith not always in the middle? Or why are some of the rings thicker on one side? (What would happen to a tree that got better exposure to light and air and better nourishment on one side?) Draw a picture showing how a tree each year molds upon itself a new, cone-like sheath.

If you cut a section from the base of a tree, and another from one of the big branches, would each section show the same number of rings? Why not? If a tree section has fifty rings, a branch thirty, and another branch twenty, at what time in the tree's life did the branches grow?

Give the children different boards and ask them to find out exactly from what part of the log each board was cut. (Note: This can usually be done by completing the rings found in the end of the board.) Would young wood be heavier and stronger than old? Why?

Another good way to study wood structure is to test the strength of different kinds and of different cuts of wood. This may be done by splitting pieces of the same length and size from the different kinds of wood, and then, after supporting the ends, by hanging weights from the center till the sticks break. Afterward try the same experiment with pieces cut across the grain.

III. GROWTH OF WOOD FORESTS. Where do the different woods grow? Latitudes?

Pine, oak, and hemlock in the north temperate zone and in the mountains and highlands of the south temperate zone. Mahogany in Central America and the Antilles.

Effect of forests on economy of earth. How do trees affect the mitigation of heat and cold, humidity, enrichment of soil?

Trees afford shelter for man and beast, and are used for fuel and timber, dyes, drugs, and gums.

Logging methods: Show pictures of logging camps. Discuss the great waste of our forests, and the necessity of better forestry laws. What ought the country do to protect its forests?

References: U. S. Government Reports on *Woods;* Jackman, *Nature Study.*

History: Leaving the story of Rome at the Augustan Age, the class will begin to work back to the history of Britain and the English. The transition will be made through the story of the Teutonic migrations. The class, remembering the Germans from their study of Cæsar's second campaign in Gaul, will now be ready to take up the stories of the Teutonic invasions into the Roman Empire.

Let the children read out of class the stories of Alaric, Odoacer, Theodori, Genseric, and Attila, and discuss in class the bearing of what these men did on the government and history of the Roman Empire.

The causes of the invasions will be worked out next—(1) land-hunger, (2) personal ambition of leaders, (3) pressure from the east and north of Pan-Slavic peoples—together with the character of the Teutonic tribes. From descriptions of their tools and weapons, let the class discover the occupations and manner of living of the Teutons. Read here from Tacitus' *Germania.*

Special emphasis should be put on the consideration of the Teutonic tribal government, since out of that government probably came the English folk-moot, and our own New England town-meeting.

What idea or ideas would suggest themselves to such a people—fierce, hardy, and brave—dwelling on the Roman frontier, seeing before them the well-tilled fields of Gaul, and hearing more and more often of the splendor, the wealth, and the luxury of Rome? And if you add to this condition a pressure upon themselves from fiercer and more savage tribes to the north and east, what would inevitably happen?

Then, make a point of the fact that nearly all of these Teutonic invasions were essentially migrations rather than mere military adventures. Let the class see that the migratory movement was not only into Italy and the southern Roman provinces, but also into lands north and west of the Teutonic home-lands; into Scandinavia; along and down the valleys of the German rivers to the sea. Show the class a map on which the probable homes of the Jutes, Angles, and Saxons are indicated, and let them read the story of Hengist and Horsa. This will bring them directly to England and the Saxon settlements on the southeast coasts of Britain.

The question of why Vortigern called in the Saxons to help against the Picts and Scots will raise another question: Why could not Rome protect her colony? The answers to this question will show that the Roman boundaries were no longer extending, but falling back, and that the Roman power was no longer sufficient to maintain the large body of the Roman Empire.

The class will recall that Cæsar was the first Roman to enter Britain with an army of conquest. The character of the British whom Cæsar met can be developed as was that of the Germans; *i. e.*, from descriptions of the weapons, tools, clothing, and houses of the British the class will think out the manner of the Celtic life.

A good deal of emphasis will be laid on the Druidical religion through a study of its form and of its curious temples. See pictures of Stonehenge. The class should learn the difference between a dolmen and a cromlech, and should form their own opinions of what these things meant to the Celtic priests and worshipers. If time permits, some study will be made of early man in Britain, through the relics of stone he has left.

References: Higginson and Channing, *English History for Americans;* Myers, *Mediæval and Modern History;* Kirkland, *History of England; Stories of the Gothic Invasions; Encyclopedia Britannica;* Boyd-Dawkins, *Early Man in Britain;* Waterloo, *Story of Ab.*

Art Expression: Paintings and drawings of stone tools and of implements used by early man in Britain. Water-color paintings illustrating the customs of men in the Stone Age. Pictures of the Teutons or Goths.

Geography: The British Islands and Scandinavia will be the geographical study for March and April, in correlation with the history. The class will take up Scandinavia in connection with the story of the Norse invasions of England. The close relation between the larger historical divisions and the natural physical divisions of these countries will be constantly insisted on—that the character of the land guided the long struggles by allowing the defenders to make good resistance against successive invaders. Thus it will be shown that England, Wales, Scotland, Ireland, the Isle of Man, and the Channel Islands, although making a complete political union, are really natural units.

I. POSITION AND EXTENT, in reference to climate. On a large map of the world the pupils will study the 50th and 60th parallels of north latitude, which include the British Isles, and they will carefully note the climatic conditions obtaining in all parts of the earth lying between these parallels. (See Bartholomew's Commercial Map, or any physical map that will show the mean isothermal lines on the earth for July and for January.) Mean isothermal lines for January in England: 40°; South Siberia, 0°; Alaska, 20°; Labrador, 10°. For July: England, 60°: Siberia, 70°; Labrador, 50°; Alaska, 60°.

1. In studying to explain the cause of such great differences in temperature through the same parallels of latitude, the class will discover the importance of ocean winds and currents as modifiers of climate. (Note: In order that the pupils may follow this study as a unit it will be best to have a large class map to show the isothermal lines, ocean winds, and currents.)

2. (a) The gulf stream: its cause, direction, and effect. (b) The Labrador current. (c) The Japan current.

II. GEOLOGICAL FORMATION: Although no great mountain ranges or great rivers are to be found in the British Isles, there is so great a variety of land-forms resulting from remote geological changes and the more recent effect of erosion, that the class will study through these islands: (1) how land surfaces may be formed; (2) the wearing away of land surfaces (erosions); (3) the movements of the earth's crusts up and down (diastrophism).

1. Formation: (a) The western and northern part of Scotland is like Scandinavia in formation. What would this indicate?

(b) South and east of Scotland lie the carboniferous strata of England, and further east and south plains like those of western France. What are and have been the character and occupations of the people living in these various parts? [Note in this connection the density of population in the British Isles. In 1898 population averaged 330 per square mile. But in England density is 500 per square mile. The bare Highlands are almost unpopulated; greatest density of population in the mineral fields, and near certain seaports.]

2. Erosion: How does it come to be that in the British Isles the highest land and best scenery is in the north and west, and the lower and more uniform surfaces to the south and east? The answer to this question and its complementary ones will bring out the whole subject of erosion.

"The northern and western regions have possibly been on the whole land areas since an early geological period; the rocks of the south and east have been formed by the sediments worn off the northern lands and spread out on the shores of seas, or in great fresh lakes." — H. R. MILL.

This subject will be developed in the class by the use of books, pictures, maps, questions, and all the forms of expression.

3. Diastrophism: Let the class study the western coasts of England, Scotland, and Scandinavia on their maps. They will find it island-starred, and indented with long fjords and rias.

If a volcanic country, worn and cut by erosion into a complex system of valleys, should have its coast tilted into the sea a little what would happen? Consider drowned valleys in other parts of the earth.

(To be continued in April.)

References: Mill, *International Geography;* Reclus, *Earth and Its Inhabitants;* Bartholomew, *Atlas of Commercial Geography;* Davis, *Physical Geography;* Tan, *First Book in Physical Geography.*

Art Expression: Chalk-modeling of typical landscapes showing effects of erosion. Water-color paintings of landscapes typical of British Isles.

Latin: (See Ninth Grade outline.)

Oral Reading: These grades will continue the reading of *Julius Cæsar.*

Music: (MISS GOODRICH.) The results of first attempts at original composition were not very satisfactory; that is, the children were self-conscious and distrustful and the melody finally evolved in the half-hour was trite, monotonous, and somewhat sentimental. This is perhaps partly, though not wholly, due to the unfortunate choice of text. The melody consists merely of a patching together of the phrases they have heard most often. This patch-work, of course, is of no value; it is a mere exercise of memory. Unless the children show some strong desire to go on with this work, and succeed in producing original melodies, it will soon be discontinued.

Songs: *Pussy Willow's Secret, A Man's a Man for a' That,* Songs of Life and Nature; *The First Grass, Winter and Spring,* Modern Music Series, Third Book; *A Song of Praise, Come, Thou, Almighty King,* Modern Music Series, Second Book.

French: (MLLE. ASHLÉMAN.) The French will grow out of the history work:

I. The thought of the reading lessons will be illustrated by the dramatic presentation of the most characteristic events in the lives of Robert the Devil, William the Conqueror, Edward I., and Harold, as shown in the accompanying play, *Robert le Diable et Guillaume le Conquérant.*

II. For French conversation, discussion of the culture and customs of the Normans, and comparison with those of the Saxons.

1. Introduction of French customs and French language by Edward I.
2. Use of the French words by the lord, while the farmer retained the Saxon words.
3. Examples of cases in English where both Saxon and French words are retained: der Ochs, the ox; le bœuf, the beef; das Schaaf, the sheep; le mouton, the mutton; das Kalb, the calf; le veau, the veal, etc.

III. Reading of *Ivanhoe.*

Robert le Diable
et
Guillaume le Conquérant

[AVERTISSEMENT: Robert le Diable parvint à la couronne ducale par un fratricide. Son âme le trouble. Il veut aller à Jérusalem visiter le tombeau de notre Seigneur. Il rassemble les barons de son duché et leur déclare son intention.]

Scène I

(Normandie.)

Robert le Diable, Guillaume (son fils), Barons.

Robert. Barons, vous les grands de mon royaume, je vous rassemble aujourd'hui pour vous déclarer mon intention d'aller à Jérusalem! Je veux aller verser des larmes au sépulcre pour obtenir de Dieu le pardon de mon crime.

Premier Baron (*étonné*). Monseigneur, vous, vous voulez aller à Jérusalem!

Deuxième Baron. Ah! Qu'allons nous devenir sans notre chef!

Troisième Baron. Notre patrie, notre pauvre patrie! Quel désordre nous allons de nouveau subir.

Robert le Diable. Par ma foi, je ne vous laisse pas sans seigneur! Je vous présente mon fils unique, Guillaume. Choisissez cet enfant pour mon successeur si je ne reviens pas de mon pélérinage. (A son fils s'attendrissant). Guillaume, quoique vous n'ayez pas encore huit ans, mon enfant, je vous fais mon héritier!

Premier Baron. Nous sommes satisfaits de jurer fidélité à un prince du sang de Roland.

Robert le Diable (*ému*). Mon fils avant de partir je te meterai sous la protection du roi de France Henri I$^{\text{er}}$. N'oublie jamais le sang qui coule dans tes veines, mais, mais (*vivement*) fais mieux que ton père! Sois un jour non, Guillaume le Diable, mais Guillaume le Conquérant!

[AVERTISSEMENT: Le père d'Edouard I., roi d'Angleterre, avait reçu l'hospitalité á la cour des ducs de Normandie.

Edouard avait passé son enfance en Normandie, il ne connaissait guère les mœurs des Anglais lorsque les Anglo-Saxons l'appelèrent au trône d'Angleterre.

Edouard I., d'un caractère simple et généreux, admit avec faveur à sa cour, à son foyer et à sa table les hommes de Gaule, les amis qui avaient adouci sa longue infortune. Il oublia presque qu'il devait sa couronne aux Saxons, et non aux Normands.

Les Normands et les Français fiers de leur instruction, de la culture de leur esprit, de l'amitié d'Edouard, tournèrent en ridicule les coutumes des Saxons moins civilisés.

Les Anglais de race noble, ceux qui voulaient plaire au roi, parlèrent français, adoptèrent les mœurs, les usages, l'écriture, les vêtements, et les jeux même des Normands.

Le duc de Normandie vint aussi á la cour de Londres, entouré d'une suite brillante pour visiter son royal parent.

Edouard le reçut avec affection et le combla de présents, il lui promit même (secrètement) de le faire son héritier.]

Scène II

(Angleterre.)

Edouard I, Harold (fils de Godwin).

Harold. Mon roi, je viens demander la permission d'aller réclamer en votre nom la délivrance de mon frère Vulnoth et de mon neveu Haco, que vous avez exigé comme otages. Vous n'avez plus de motifs pour les garder. Voilà plus de dix ans que Guillaume les retient à sa cour dans une sorte de captivité.

Edouard I. Je consens volontiers à me dessaisir des otages, mais, Harold, ne va pas les chercher toi-même! Je ne veux pas te refuser, mais, si tu pars, ce sera contre mon gré. Je connais bien le duc Guillaume: il te hait et ne t'accordera rien á moins d'y trouver un profit. Choisis un autre ambassadeur!

Harold. Mon roi, vos alarmes, ce sont des rêves; permettez moi de partir entouré de mes joyeux compagnons! Je m'embarquerai dans un port du Sussex.

Scène III

(Normandie.)

Guillaume et Harold couchés sous la même tente.

Guillaume. Harold, j'ai une confidence à te faire.

Écoute! Quand Edouard et moi, nous vivions sous le même toit, il me promit, si jamais il devenait roi en Angleterre, de me faire héritier, de son royaume. Harold, si tu veux m'aider à réaliser cette promesse, je t'accorderai tout ce que tu me demanderas.

Harold (*surpris, troublé*). Ah!

Guillaume. Oui, je vois tu consens. Il faut que tu jures de fortifier le château de Douvres et de le livrer à mes gens d'armes dès que je l'exigerai, ta sœur épousera un de mes barons, toi-même tu prendras en mariage ma fille Adèle! Pour gage de ta promesse, tu me laisseras l'un des deux otages, que je ramènerai moi-même lorsque j'entrerai comme roi en Angleterre.

Scène IV

(Salle de Conseil à Avranches.)

Barons, seigneurs. Guillaume, assis sous un dais, la couronne ducale en tête, l'épée nue à la main. Harold.

Guillaume. Apportez les deux reliquaires, posez les sur ce drap d'or. (*A Harold.*) Je te prie devant cette noble assemblée de confirmer par serment ce que tu m'as promis.

Harold (*pris au dépourvu, hésite, puis étendant la main avec trouble sur les deux reliquaires*). Je jure d'exécuter toutes mes conventions avec vous, duc, pourvu que je vécusse, et que Dieu m'y aidasse!

Les assistants (*répètent*). Ke Dex li dont. Que Dieu l'aide.

Guillaume. Qu'on enlève le drap d'or! (*On découvre une cuve, remplie jusqu'aux bords des ossements et des reliques des saints les plus vénérés.*)

Harold (*frémit, change de visage*). Dieu, une cuve des corps saints! J'ai prêté serment sur des ossements vénérés.

Scène V

(Angleterre, prés de Hastings, 28 septembre, 1066.)

L'armée normande touche au sol de l'Angleterre. Archers, court vêtus et tondus sur les oreilles, après tous les gens d'armes, prêts à combattre, vivres, tous les charpentiers, massons, ouvriers de bras, après le duc. Comme Guillaume met le pied sur le rivage, il trébuche et tombe sur la face.

Ceux qui l'entourent. Dieu nous garde! Voilà un mauvais présage!

Guillaume (en se relevant). Que dites-vous donc? J'ai saisi cette terre de mes mains, et, par la splendeur de Dieu, tout est à nous tant qu'il y en aura.

The High School

Latin, Eighth and Ninth Grades: (KATHARINE M. STILWELL.) The students who began Latin in the Eighth Grade and those who began it in the Ninth Grade were found to be so near together in the quality of their work in January that they were put into one class, and January, therefore, was spent in helping them to become more familiar with the ideas and forms of expression used in Lessons I–VII and in the reading lessons of the Eighth Grade.

Lessons IX and X were in consequence not taken up until February.

In working out "The Epitaph of a Fair Roman" it was thought best to add to this a full account of the Roman funeral that the pupils may comprehend the ideas underlying these ceremonies. We wish them to see how, when a Roman died, all the ancestors of the family went to the funeral each wearing his robes of office and bearing the civic wreaths or other symbols of honor he had won, and how the funeral train halted in the Forum to hear recounted the brave and noble deeds of the dead Roman and his ancestors. Thus the pupil may get some idea of how deeply each individual Roman felt his debt to the past and his duty to the future — his obligation to make his own life as noble and useful as the lives of his ancestors had been — so that his descendants also might praise him in the years to come. This "sense of social duty," as it has been called, which is perhaps the most important contribution of Rome to civilization, found its most picturesque expression in this formal procession in honor of the dead.

The description of the funeral ceremonies will be the next reading of the class. This will be followed by the lessons adapted from Viri Romae. In working out this series of lessons, no effort has been made to teach the forms other than as they occur in the reading lessons. Yet form has not been overlooked, for it is the tool by means of which the work is to be done. But it is found that when the content of the lesson seems valuable to the pupil, the effort to gain that content creates an impulse which carries him over the difficulties of the forms. In the recitation, however, the difficult sentences are studied by means of thought analysis. For instance, in the story of Horatius, questions might be asked similar to the following:

What is the subject? Ancus Martius.
Who was Ancus Martius? Rex.

Of whom? Rōmānōrum.
What did he do? Coniūnxit.
What? Janiculum.
To what? Urbi.
By what? Ponte.
Of what kind? Subliciō.
What was the effect of this? Qui dedit.
What? Iter.
To whom? Hostibus.
When? Postquam rēgēs expulsi sunt.

In this manner the pupils (who have never studied English grammar) have learned to recognize the relation of the different words in the sentence, and to observe the Roman way of expressing constantly recurring ideas. When by means of this analysis, the pupil thinks he comprehends the meaning of the sentence, he reads it aloud (in Latin). The pupils judge his interpretation and compare it with their own. Sometimes one of the class is called upon to give (in English) the meaning expressed by the reader. At other times he is asked to express his own idea of the sentence. Oftentimes the entire lesson is read in Latin, and the class gives its translation in the form of a drawing.

If the oral reading shows that the pupil has not the right idea, he is questioned regarding the constructions, and thus led to find the true meaning of the passage. But in no case is he questioned upon the construction after the translation. The difficulty of the vocabulary is slight, as the method tends to show the pupil that the ability to read depends largely upon his knowledge of the constructions.

Latin Lessons for Eighth and Ninth Grades

Number V

Dē Fūneribus apud Rōmānōs

Rōmānīs erat lūctuōsum sepultūrā carēre. Iūsta nōn cōgnātīs modo sed etiam aliēnīs faciēbant.

Temporibus antīquissimīs fūnera saepe noctū celebrābantur. Posteā interdiū plēumque celebrābantur.

Cum nōbilis dēcessit, ex ēis quī aderant sanguine coniūnctissimus oculōs dēfūnctī pressit. Deinde nōmen mortuī conclāmābant, quā conclāmātiōne eum excitāre volēbant sī modo graviōre somnō premitur. "Conclamatum est."

Tum corpus aquā calidā lavābant quasi dēficientem restitūtūrī. Libitīnārius omnia quae erant fūnerī necessāri asuppeditāvit. Pollinctor, ēius servus, corpus cūrāvit. In ōre nummum interdum posuit. Haec erat mercēs Charontī, Stygis, portitōrī.

Corpus ad diem quartum aut nōnnumquam ūsque ad nōnum honōris causā in atriō servābātur. Amīcī hominem mortuum visitāvērunt. Tūra cremābant. Dē honōribus, quōs dēfūnctus gesserat, inter sē colloquēbantur. Insīgnia, quae adeptus erat, ostentābant. Rāmōs cupresseōs aut pīneōs in atriō suspendērunt. Hīs rēbus factīs, praecō amīcōs ad pompam fūneris convocāvit hīs verbīs: "Ollus Quiris lētō datus. Exsequiās quibus est commodum, īre iam tempus est. Ollus ex aedibus effertur."

Dēsīgnātor pompam ōrdināvit. Prīmī iērunt tībīcinēs. Hōs praeficae quae nēniās cantābant secūtae sunt.

Mimi aderant, ex quibus ūnus partēs mortuī agēbat. Tum vidēbantur imaginēs māiōrum. Eī ēlēctī, quī statūrā et corpore parēs erant māiōribus dēfūnctī, imāginēs gerēbant cēreās et tālem vestem quālem illī māiōrēs ōlim gerēbant. Tum portātae sunt tabulae, in quibus rēs gestae

mortuī erant īnscrīptae. Hās cadāver in lectō iacēns secūtum est.

Lectus plērumque ā coniūnctissimīs aut lībertīs ferēbātur. Eburneus erat et tēctus vestibus strāgulīsque aurō ac purpurā pictīs.

Cōgnātī et necessāriī lectum subsequēbantur.

Vistīmenta lūgubria erant ātra, sed temporibus imperātōrum albis ātra mulierēs mūtāvērunt. Scindere vestem erat sīgnum lūctūs.

Lectus in forum lātus est ubi cōgnātus laudātiōnem fūnebrem prōnuntiāvit.

Aliās cadāver sepultum est, aliās cremātum. Coniunctissimus rogum accendit. Cinerēs collectī in ūrnam conditī sunt. Tum postrēmō dēfūnctum sīc invocābant: "Avē, anima candida, sit tibi terra levis."

Nōnā diē post exsequiās silicernium celebrātum est.

Vocabulary

NOUNS.

sepultūra, ae, f., *burial.*
iūsta, *funeral rites.*
cōgnitus, *known.*
fūnus, eris, n., *funeral.*
nōbilis, *famous, high-born.*
sanguis, inis, m., *blood.*
coniūnctissimus (as substantive), *nearest relation.*
oculus, ī, m., *eye.*
somnus, ī, m., *sleep.*
aqua, ae, f., *water.*
ōs, oris, n., *mouth.*
nummus, ī, m., *a piece of money.*
merx, cis, f., *reward, pay.*
honor, ōris, m., *honor, office.*
ātrium, ī, n., *principal room.*
rāmus, ī, m., *a branch.*
pompa, ae, f., *procession.*
tībīcen, inis, m., *flute player.*
nēnia, ae, f., *funeral song.*
mīmus, ī, m., *mimic, actor.*
imāgō, inis, f., *copy, likeness.*
māior (as substantive), *ancestor.*
statūra, ae, f., *size, stature.*
portitor, ōris, m., *ferryman.*
cadāver, eris, n., *dead body.*
lectus, ī, m., *couch.*
lībertus, ī, m., *freedman.*
necessārius, ī, m., *relation.*
vestīmentum, ī, n., *clothing.*
mulier, eris, f., *woman.*
vestis, is, f., *clothing.*
lūctus, ūs, m., *grief.*
sīgnum, ī, n., *sign.*
laudātiō, ōnis, f., *eulogy.*
rogus, ī, m., *funeral pile.*
cinis, eris, m., *ashes.*
urna, ae, f., *urn.*

NOUNS.

exsequiae, ārum, f., *funeral procession.*
silicernium, ī, n., *funeral feast.*
tūs, tūris, n., *incense.*

ADJECTIVES.

lūctuōsus, *sorrowful.*
gravis, *heavy, burdened.*
calidus, *warm, hot.*
necessārius, *needful.*
pār, *equal.*
eburneus, *of ivory.*
lūgubris, *mournful.*
āter, *black.*
tālis, *such.*
quālis, *as.*

VERBS.

careō, 2, *be without.*
celebrō, 1, *celebrate.*
dē-cēdō, 3, *depart, die.*
premō, 3, *press, cover.*
con-clāmō, 1, *cry out together.*
volō, *wish.*
excitō, 1, *arouse.*
lavō, 1, *wash.*

VERBS.

restituō, 3, *restore.*
suppeditō, 1, *provide.*
cūrō, 1, *attend to.*
servō, 1, *preserve.*
cantō, 1, *sing.*
agō, 3, *act, perform.*
videō, 2, *see.*
mūtō, 1, *change.*
scindō, 3, *tear.*
prōnūntiō, 1, *utter.*
accendō, 3, *kindle, set on fire.*
conligō, 3, *collect.*
condō, 3, *store up.*
conloquor, *talk about.*
adipīscor, *obtain.*
sequor, *follow.*

ADVERBS.

noctū, *at night.*
interdiū, *in the daytime.*
quasi, *as if.*
causa, *for the sake of.*
ōlim, *formerly.*
sīc, *thus.*

CONJUNCTIONS.

si, *if.*
aut, *or.*

References: Harper's *Dictionary of Classical Literature and Antiquities*, under *Funus;* Becker's *Gallus;* Excursus, *Burial of the Dead;* Preston & Dodge, *Private Life of the Romans*, ch. I.

Roman History

THE TRADITIONS

Saturn

Sāturnus antīquissimīs temporibus in Italiam vēnit ut Rōmānī crēdēbant. Ibi prope Jāniculum arcem condidit, eamque Sāturniam appellāvit. Hīc Italōs prīmus agrī cultūram docuit.

Latinus and Aeneas

Latinus posteā in eā regiōne rēx erat. Dum hīc rēx est, Trōia in Asiā ēversa est. Unde Aenēas Anchīsæ filius cum multīs Trōiānīs, quī a Graecīs nōn interfectī erant,

aufūgit et in Italiam pervēnit. Ibi quamquam Trōiānus fuit, fīliam Latinī rēgis in mātrimōnium duxit et urbem condidit, quam in honōrem coniugis Lāvīnium appellāvit.

Founding of Alba Longa

Post Aenēae mortem Ascanius, Aenēae fīlius, regnum accēpit. Hīc sēdem rēgnī in alium locum trānstulit, urbemque condidit in monte Albānō, eamque Albam Longam appellāvit. Eum secūtus est Silvius, quī post Aenēae mortem genitus erat. Eius posterī ūsqué ad Rōmam conditam Albae rēgnāvērunt.

Vocabulary

NOUNS.

regiō, ōnis, f., *country.*
coniūnx, ingis, m. and f., *wife or husband.*
sēdēs, is, f., *seat, throne.*

VERBS.

crēdō, 3, *believe.*
condō, 3, *build, found.*
ēvertō, 3, *destroy.*
aufugiō, 3, *flee.*

ADVERBS.

prope, *near.*
ūsque, *even.*

RELATIVE.

ut, *as.*

ADVERSATIVE CONJUNCTION.

quamquam, *although*

Points in Grammar

The passive voice.
Use of deponent verbs.
The indicative mode.
Determinative clause with qui or cum.
Clause of reason with quod.
Adversative clause with quamquam.
Clause of situation with dum.

Ninth and Tenth Grades

Latin, Ninth and Tenth Grades: (ALLEN W. GOULD.) More time than was planned has been taken in studying the geography of Gaul and Germany, and the condition of the natives as shown in Cæsar's Gallic War, and so the work laid out for January and February will probably take up most of March.

The practice in using Latin has consisted principally in giving answers in Latin to questions based on the text, like the following:

1. Tell in Latin who the three different peoples of Gaul were and what their boundaries were in mountains and rivers.
2. Tell in Latin what the two chief classes were among the Gauls, and state briefly the duties and privileges of each.
3. Tell in Latin how the young men prepared themselves to be Druids.
4. Tell in Latin what reasons Cæsar gave for the Druids' custom of memorizing their verses. What reason would you give?
5. Tell in Latin what the Gallic custom was regarding the wife's dowry.
6. Tell in Latin what a Gaul was required to do when he heard any news of importance to the state.
7. Tell in Latin how the Germans managed in regard to the cultivation of the ground. What reason would you give for this custom?
8. Tell in Latin what reason Cæsar gave for the existence of uninhabited tracts of land about each German tribe. What reason would you give?

The students are also asked to put back into Latin, without the use of their books, some of the passages which they have translated into English.

Greek, Ninth and Tenth Grades: (ALLEN W. GOULD.) During this month the beginners in Greek will probably complete the lessons in Gleason & Atherton's *First Greek Book*, as well as read some thirty pages of Moss' *First Greek Reader*, taking those passages that throw light on Greek life and history. The students will also be asked to make themselves familiar with the chief events in Greek history, using some adequate book for that purpose, so that they may have a framework in which to fit the new ideas they get from the Greek. They will also be expected to make a map of Greece, with mountain ranges and sea indentations, as the physical framework of the history and as one of the causes of that history.

The Greek composition will consist partly of the material found in the *First Greek Book*, and partly of brief answers in Greek to questions about the subject of their study, like those given in the December Course of Study, pages 318–324.

German, Ninth and Tenth Grades: (Dr. Siegfried Benignus.) In February, German was correlated with Greek history—that is, with the age of Pericles. In March, the pupils will be given a survey of Grecian art, and its influence on Europe. They will report verbally and in writing, thus furnishing opportunity for correcting oral expression and for composition work.

The topics for special exercises in the language of every-day life will be the city in general. Reading in the *Picture Book without Pictures* is continued in the way shown in the former numbers of the Course of Study.

For memorizing, the pleasing *Meeresabend*, by the poet Count Strachwitz, has been selected.

Meeresabend

Sie hat den ganzen Tag getobt
Als wie in Zorn und Pein,
Nun bettet sich, nun glättet sich
Die See und schlummert ein.

Und drüber zittert der Abendwind,
Ein mildes, heiliges Weh'n;
Das ist der Atem Gottes,
Der schwebet ob den See'n.

Es küsst der Herr aufs Lockenhaupt
Die schlummernde See gelind
Und spricht mit säuselndem Segen:
"Schlaf' ruhig, wildes Kind!"

Moritz Graf Strachwitz, 1822–1847;
"Neue Gedichte."

French, Ninth and Tenth Grades: (Lorley Ada Ashléman.) The Ninth and Tenth Grades will dramatize *La Dernière Classe*, by Alphonse Daudet. The work in grammar will develop naturally, as need is manifested for it by the students.

Physiography, Ninth Grade: (Wallace W. Atwood.) Subject: Mountains. This work will be introduced through the study of pictures, stereopticon views, maps, and models. The problems which arise during the observational study will serve as a basis for the systematic consideration of the different types of mountains.

In correlation with the history and language work of this grade, special attention will be given to the mountains of Europe and the Mediterranean region.

1. Block Mountains: Study the Great Basin region, the Vosges and Black Forest mountains, and the mountains of Palestine and Moab. (Refer to figure 101 in Davis's *Physical Geography*, and to figures 64, 65, and 66 in James Geikie's *Earth Sculpture*.)

a. Origin and growth of block mountains.
b. Kinds of faults found in such mountains.
c. Drainage and erosion.
d. Settlement and development in regions chosen for illustration.

2. Folded Mountains: Study the Jura, the Middle Carpathians, the Pyrenees, the Alps, and the Appalachians. (Use figures 105 and 118 in Davis, and figures 40 to 53 inclusive in Geikie.)

a. Origin and growth of folded mountains.
b. Analysis of folds in mountains.
c. The general topographic form during youth.
d. The drainage in regions of young folded mountains.
e. Life among the mountains.
f. Influence of mountain barriers upon climates and population.
g. The destruction of folded mountains.
h. How could the former presence of great mountains be proved?

The deposition and mining of ores may be considered, and also the influence of mineral wealth upon the settlement and development of a region. In this work the students should become familiar with the common ores of iron, lead, copper, and zinc.

3. Domed Mountains: Based on the study of the Black Hills of South Dakota. (See figure 106 in Davis's *Physical Geography*.)

a. Origin and growth.
b. Erosion and general degradation.
c. The structural relations in the field which help in working out the history.

d. Ore deposits in the Black Hills and their influence on the settlement and development of the region.

4. Subdued Mountains: Examples are found in the Blue Ridge and other mountains of North Carolina, in the mountains of Wales, and among the heavily wooded mountains of central Europe, such as the Schwarzwald of Germany.

5. Worn-down Mountains: The Piedmont belt of Virginia is an excellent example. Many regions of worn-down mountains have been uplifted, causing a quickening of the streams and consequent dissection. Examples of such regions are found in the Slate mountains of Germany, in the New England highlands, the Appalachian mountains, the highlands of Scotland, and the Erzgebirge of Germany.

6. Embayed Mountains: Study coasts of Norway, Scotland, Greece, British Columbia, and southern Alaska.

Art Expression: Chalk-modeling by the students is introduced into nearly every lesson. Water-colors and crayons are also used in reproducing mountain scenes.

References: Davis, *Physical Geography;* Geikie, *Earth Sculpture, Text-book on Geology,* and *Elementary Lessons in Physical Geography;* Chapter on *Folds* in *Principles of Pre-Cambrian Geology,* U.S.G.S., 16th Annual, and Van Hise, *Earth Movements,* Trans. Wis. Academy of Sciences, Vol. XI; Topographic maps.

Greek History, Ninth, Tenth, and Eleventh Grades: (GUDRUN THORNE-THOMSEN.) The War with Persia and the Age of Pericles: The aim will be to present conditions that the children may form vivid growing images of a war in which Greek civilization and Greek institutions showed their superiority in strength and vitality over those of the Orient; also of a period in Greek history that more than any other reflects the tendencies and ideals of Greek culture.

Materials for study will be found in extracts from contemporaneous writers, in relics of the time, such as objects of art, buildings, etc. Pictures, stereopticon views, maps, and models will be used freely. The Art Museum will be visited.

Method: I. The pupils will trace the further development of Greek institutions during this period, and see how the growing antagonism between democracy and aristocracy, as exemplified by Sparta and Athens, expressed itself in the foreign policy of the Greek states.

We shall make a close study of culminating events that are full of dramatic action. By focusing the attention on such events the pupils will have a motive for and an interest in studying the causes which led up to them.

II. Attention will be given to the study of prominent men who in their lives reflect the spirit and ideals of the time, and who by their moral and intellectual qualities have a determining influence upon contemporary society—Miltiades, Aristides, Themistocles, Pericles.

III. The Battle of Thermopylæ: This battle will be the starting-point for our study of the Persian War, as it presents in a few powerful strokes a picture of Greek spirit, and contrasts it with that of the Persians. The pupils will be asked to study the battle from their text-book, and from other books.

1. We shall have a chalk-modeled map of the Balkan Peninsula, and also a model in sand of Thermopylæ, with the surrounding country, and as many pictures as possible. By the use of this material, and by descriptions, the pupils will image the geography of Thermopylæ. With this geographical basis, we shall then proceed to discuss the battle itself. The pupils will picture the Persian horde as it sweeps southward through Thessaly.

2. Why is this tremendous army advancing toward Thermopylæ? Compare the Persians with the Greeks as to organization, numbers, and equipment. As the battle proceeds, the spirit which animates the Greeks will be noticed, also how the Persian officers scourge their men to battle. Extracts from Herodotus will be read in class.

IV. Having witnessed, as it were, the battle of Thermopylæ, and having felt something of the spirit of the Greeks in their struggle against the Persians, the pupils will have for their next topic of consideration the causes of the Persian invasion and the events which preceded the battle.

V. The battle of Salamis will be studied in a similar manner. The geographical background will be worked out, bringing out the position of Salamis in relation to the mainland, the strait with its narrow entrances, etc. Description of an ancient vessel and how used in naval warfare. Read in class extracts from Æschylus. The Persians.

VI. Points for discussion:

1. Character of the Persian Empire and the history of its formation.

2. Comparison of Greek and Persian civilization as to government and social conditions.

3. Causes of the struggle between Greece and Persia.

4. What qualities did the Greeks display in this war, and for what did they fight? The Persians? Spirit shown by the Greeks? By the Persians?

5. What advantages did the Greeks have? The Persians? Disadvantages?

6. Attitude of Sparta and of Athens during the war.

7. Make a comparative study of Miltiades, Themistocles, Aristides, Pausanias. Which character do you like best? Why?

8. To what do you attribute the success of the Greeks?

9. What effect did the Persian wars have upon Greek civilization? What effect upon mutual relation of Greek states?

VII. The pupils will imagine themselves living in Athens at the time of Pericles. They will make a study of the costumes and the houses of the time, and give descriptions of the daily life of the Athenian in private and in public. What were his duties to the state and to the family? What education did he have for meeting these requirements?

1. Visit to the harbor of Athens as it appeared at that time, with its commercial and naval fleets, docks, and storehouses. Use of the long walls. Imports and exports of Athens. Naval supremacy.

2. Visit to the theater. Model in clay of Greek theater in order to show the position of the stage and the auditorium. Part played by the theater in the daily life of the Athenians; how they would get admission. In this connection we shall give some attention to the Greek drama and its development. Quotations from Æschylus, Sophocles, and Euripides. The works of these dramatists will be considered more fully in next month's work.

3. Acropolis. Present pictorial map of Athens showing position of Acropolis. By pictures, descriptions, and models help the children to a clear, vivid image of Acropolis as it rises from the plain. The pupils will ascend the Propylæa. View of Athens from Acropolis: the plain with the city, the surrounding hills, Peiræus and Salamis in the distance.

4. The stereopticon will be used to give an idea of Greek architecture and sculpture. Characteristics and principles of Greek architecture: the Doric, Ionic, and Corinthian styles; the different parts of the Greek temple; the Parthenon frieze.

The children will model the Parthenon in clay, and present the model to the school museum.

What public or private buildings have you seen in the Greek style? Study some of the most prominent sculptures of the time. Phidias. Evolution of Greek sculpture. Compare with Egyptian sculpture. Relation of art to religion. What qualities of the architecture and sculpture of this period do you admire? Visit to Art Museum. (See Mr. Duncan's outline on Art.)

VIII. The pupils will visit the assembly and the jury courts and listen to the great orators of the time. Further development of democracy in Athens, and changes in the governing bodies during this period will be noticed. What would be your political rights as citizens of Athens? Comparison of Greek and American citizenship. Compare our modern city and its social and political institutions with ancient Athens.

IX. Pericles as the typical Athenian: His personal character. His dominant influence in Athens and how obtained. Read extracts from his funeral speech. The pupils will commit to memory this speech and deliver it before the class. Discussion of social and political ideas as shown in this speech. Read in class quotations from Plutarch; also from Thucydides.

X. Points for discussion:

1. In what does our democracy differ from that of Athens?

2. Effect of slavery upon Greek life.

3. What qualities of the Athenian would you like to possess?

4. What was the value of the leadership of Pericles? In what did it fail? Would it be possible for a single man to attain a similar prominence in our democracy? How was it possible in Athens?

5. What is the value of the age of Pericles to our modern civilization?

Topics for Written Expression: The Athenian Citizen; Acropolis; A Visit to Athens at the Time of Pericles; Biography of Pericles, Themistocles, etc.

Art Expression: Clay model of Parthenon; sand model of Athens with Acropolis and harbor; drawings of Greek architecture, ornaments, and sculpture; drawings of ancient vessels; paintings of Greek costumes.

References: See list published under History outline, December COURSE OF STUDY; Blümner, *Home Life of the Ancient Greeks;* Grant, *Age of Pericles.*

Experimental Course in Astronomy, Ninth and Tenth Grades: (GEORGE W. MYERS.)

EXPERIMENT No. 1. To find the length of one's pace.

(a.) Stake out a square acre on level ground and pacing its perimeter and diagonals two or three times, determine the length of your pace.

(b.) Measure with the tape and stake out on a 5% or 10% grade a line of 100 feet or 200 feet, and step it not less than five times both upwards and downwards. Determine the length of pace both upwards and downwards, and compare the lengths with each other and with the lengths for level ground.

EXPERIMENT No. 2. To find the angle of the fingers and hand held at arm's length.

(a.) Extending your arm horizontally in front of your face, measure the distance from your eye to the palm of your hand, the arm being fully extended and the hand being bent at a right angle to the axis of the arm. Measure now the breadth of the individual fingers, their combined breadth across the joints just beyond the knuckle, and the breadth of the palm across the knuckles. Construct on paper isosceles triangles having the hand and separate finger breadths as bases, and all having the distance from the eye to the middle of the palm as altitude. Measure the vertical angles of these triangles with a protractor, and keep a record of their values for your own hand and arm.

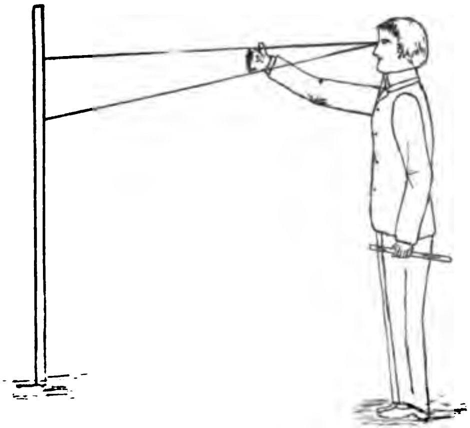


Fig. 1.

(b.) Set a flagpole or stick behind your hand, and at a measured distance from the eye, and measure the spaces just covered by your separate fingers and palm on the pole. Using these as bases construct to any convenient scale isosceles triangles as before. Obtain the angles with a protractor, or trigonometrically as in (a).

[NOTE: Experiments 1 and 2 will furnish convenient standards for obtaining estimates of lengths of lines, distances to remote objects, and sizes of angles which will be considerably better than mere guesses.]

EXPERIMENT No. 3. To find the slant of the sun's rays to the plane of the horizon.

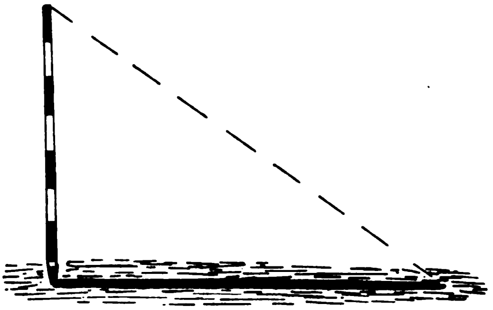


Fig. 2.

(a.) Holding a stick vertically, measure its height and the length of its shadow, and plot to any scale the measures on two lines drawn perpendicularly to each other. Connect the ends, and measure with protractor the angle opposite the line representing the height of stick.

(b.) With the aid of a plumb-line held at the top of the stake and passing through a narrow ring near the bottom the stake may be held more nearly vertically. The plumb-line may consist of a brickbat tied to a string.

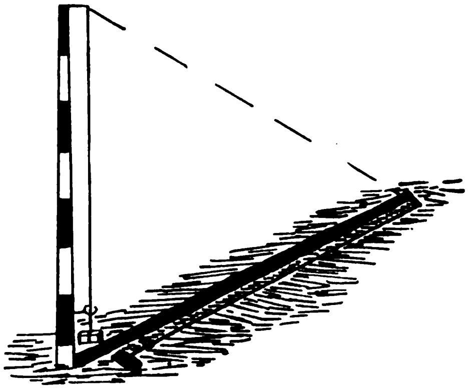


Fig. 3.

(c.) Perform the experiment with the plumb-line supplied with a bead (piece of cork) sliding with gentle friction up and down the string. Measure and use the height of bead and distance of its shadow from point directly under the bob (brickbat) as height of stick and length of its shadow were used above.

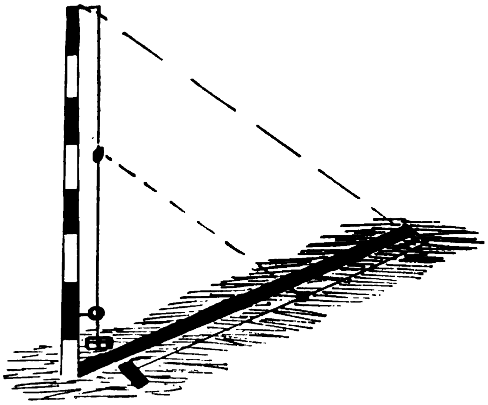


Fig. 4.

[NOTE: These experiments will furnish more accurate values for the angle, if treated trigonometrically, as may be done with older students.]

EXPERIMENT NO. 4. To find the height of a tree, building, or other object, by the length of its shadow.

(a.) Measure the lengths AE and CD of the shadows of the building and of the stick. Then if AB=h, we have

$$h:CF=AE:CD, \text{ or, } h=\frac{AE}{CD}CF.$$

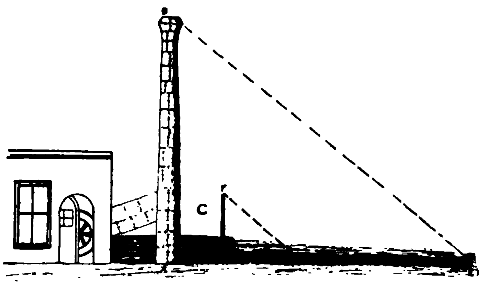


Fig. 5.

EXPERIMENT NO. 5. To find the horizontal, or oblique, dimensions of an inaccessible object, distances being known, and conversely.

(a.) Place yourself approximately (by guess) in the perpendicular at the mid point of the dimension (DE) to be measured, and setting a stake at your station (A), get behind it and line in with the ends of the dimension to be found at distances 10 feet, 20 feet, or 100 feet from this station two other stakes (C and B), and measure the distance, BC, between these two stakes. The distance from your station to the ends of the line DE being known, the proportion of (a) Experiment No. 4, furnishes the solution; thus h:BC=AB:AD.

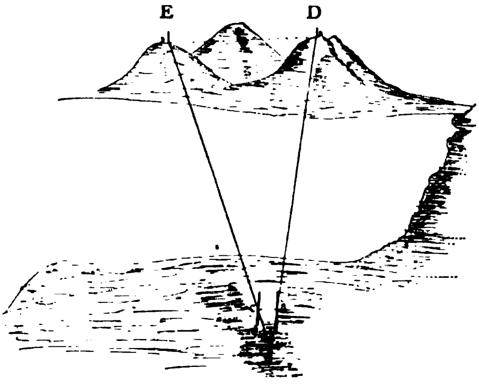


Fig. 6.

[REMARK: If the dimension is unknown, the distances are thus obtainable.]

(b.) This experiment may also be executed with an extemporized plane table, consisting of a flat-topped camera tripod, to the top of which a light drawing-board is screwed, the alidade (ab., Fig. 7), being made of a foot rule carrying two vertical needles for sights. The leveling up may be done with a 25-cent level to be had of any hardware dealer, or with a home-made level consisting of a small glass phial nearly

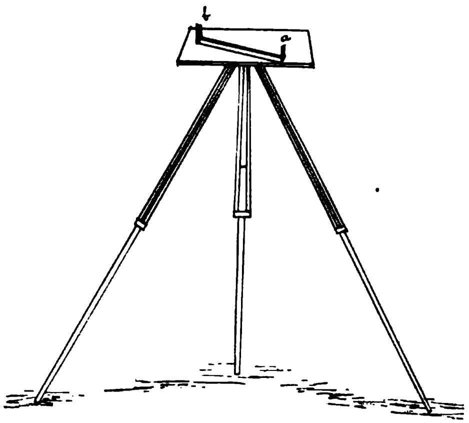


Fig. 7.

filled with alcohol, the bottle being countersunk in a block of wood.

(c.) For an oblique dimension, by sighting along the top of the board (B) the plane of this board may be brought into the plane of the line to be measured and the line of sight to the middle of the board by adjusting the lengths, or positions, of the tripod legs. The sighting with the alidade and measuring are then carried out as in (b).

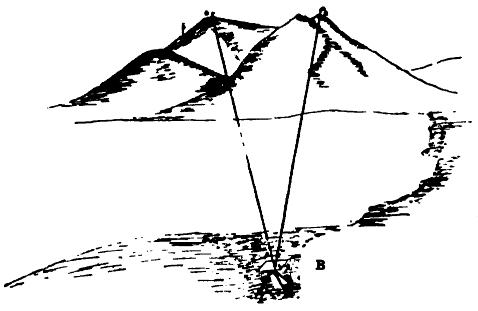


Fig. 8.

EXPERIMENT No. 6. To find the law connecting the distance of the observer with the apparent size of an object.

(a.) Place a globe, or other object, at a distance equal to 20 or more times its diameter, from the home-made plane table described above, and draw lines on the sheet of paper pinned to the board directed toward the opposite ends of a diameter, and measure the angle between them with a protractor. Then remove the globe to twice the former distance (at B) from the table and measure the angle again, then to three times (at C) the distance, etc. Tabulate the distances in one column and the measured angle in an adjoining column. Can you discover the law connecting the distances and the measured angular diameters?

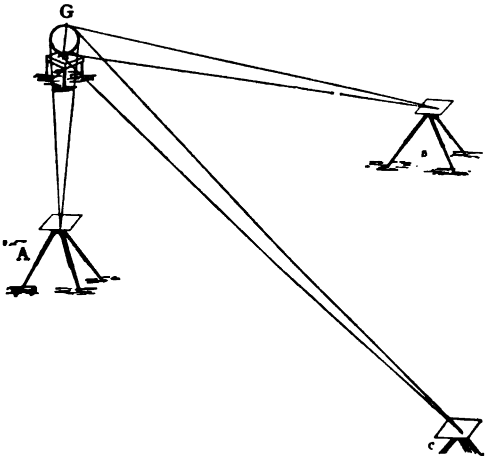


Fig. 9.

(b.) A very good crude transit can be made by graduating to degrees (or to any desired accuracy) the arc of a circle struck with a center at a point about half an inch from the middle of one edge of an inch oak board, planed smooth on one side and sawed to about two feet length. Bore a half-inch hole at the center of the arc, and cut out another board one foot square from inch stuff, and after surfacing it on one side, graduate it also to degrees about a point near (about 1¼ inches above one end) one corner. Screw an alidade arm pointed at one end, and carrying sharpened nails for sights, to this board at the center of graduation. Then cutting a spindle on the lower edge of the square board, so as to fit the hole in the first board, set the former so that it may swing freely about a line perpendicular to the latter board. The alidade being now free to swing about the screw at the lower corner, the measurement of vertical angles is made possible. To use the transit, set it on the top of the plane table described above, and level up as was suggested for the plane table.

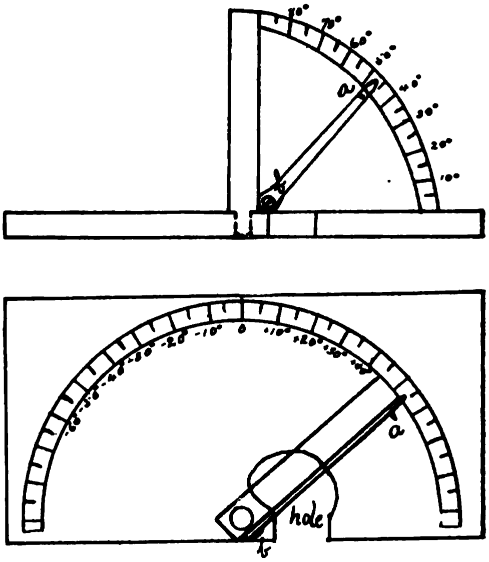


Fig. 10.

Execute this experiment with this transit.

EXPERIMENT No. 7. To find the diameter of the moon, or sun.

(a.) Holding a graduated lead pencil at arm's length, place the thumb so that when the end of the pencil is in line with one crescent tip the thumb will be in line with the other tip. Note the distance from the thumb to the end of the lead pencil. Assuming the distance to the moon to be 238,000 miles, what is the moon's diameter?

[REMARK: The value of this method of executing the experiment is in showing on what the solution of the problem of finding the lunar diameter depends.]

(b.) The experiment may be performed more accurately with a stick placed at some twenty feet from the eye, the distance between the points on the stick where the lines of sight to the two crescent tips pass it being measured.

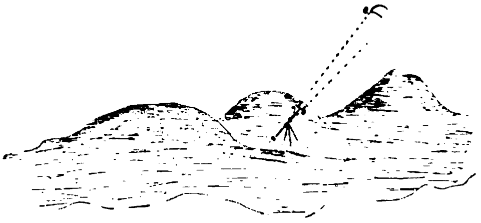


Fig. 11.

(c.) A movable sight carried along a scale fixed perpendicularly to a stick or rod some twenty feet long will give a still more accurate solution.

(d.) These measured values may be checked by the aid of Ephemeris' data, or with Sextant measures. A cheap wooden sextant can be bought of the Chicago Laboratory Supply Company.

(e.) These same experiments may be carried out for the sun by shielding the eyes with a pair of colored spectacles, or with the aid of smoked glass.

EXPERIMENT NO. 8. To determine the form of the earth's orbit.

(a.) Using the values of the solar diameter and of the differences of the sun's longitude for fifteen-day intervals, from the American Ephemeris (this book, which should be in the library of every High School where astronomy is taught, can be obtained from the Superintendent of the Nautical Almanac Office, Washington, D. C., by sending $1.00), plot the positions of the sun on lines drawn through a point (O) at angles (AOB, BOC, etc.) equal to the 15-day differences of longitude and at distances (OA, OB, OC, etc.) inversely proportional to the angular diameters.

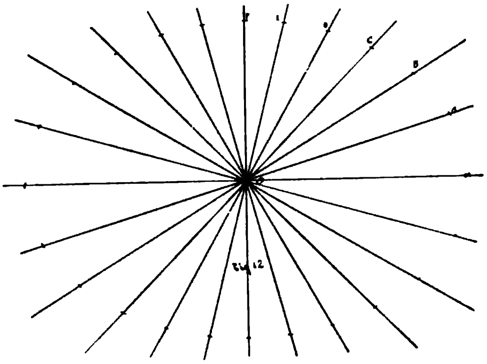


Fig. 12.

(b.) The same may be done for the moon, using two-day intervals.

EXPERIMENT NO. 9. To find rate and period of the moon's diurnal motion.

(a.) Stick a piece of lath, provided with a sight at the end, in the ground, and line in with the moon and this stick a second lath, pushing it into the ground firmly enough to hold it against the wind. Indicate on the second lath the point where the line to the moon passes it. A half-hour or an hour later line in a third lath and mark it as you did the second. Note and record the time to the nearest minute in each case. Stretch strings from the first to both the second and third laths, and transfer the angle between the strings to paper, and measure it, or measure the angle directly. Finally, find how long it will require the moon to pass through 360° at this same rate.

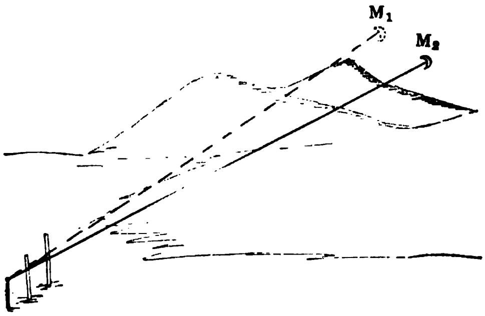


Fig. 13.

(b.) It will be readily seen that this experiment may also be performed with the home-made plane table.

EXPERIMENT NO. 10. To measure angles between objects (stars, planets, etc.) in the sky.

(a.) It will be readily seen that this may be done crudely with the aid of the data of Experiment No. 2.

(b.) A cross-staff is recommended for this purpose also. This consists of a light stick four feet long, carrying a nail sight at one end (the eye end), and provided with another stick which is held at right angles to the first, and slides easily back and forth along it. The cross-stick should be supplied with three sights, one at either end, and a third in the middle. The cross-bar should be two feet long. The trigonometry class may graduate the long stick to correspond to various angles, and write the angles beside the graduation marks. The sights must be large enough to be seen in poor light. The method of using this instrument is obvious.

(c.) The experiment may also be performed with the sextant. It is a good exercise for the home-made sextant referred to under Experiment No. 7 (d).

EXPERIMENT No. 11. Locate stars on a spherical blackboard from Ephemeris values of Right Ascension and Declination. (The Chicago Laboratory Supply Co. can furnish inexpensive globes for this purpose.)

EXPERIMENT No. 12. Trace and learn the positions of the Celestial Equator and the Equinoctial Colure among the stars. A chart such as those of Upton's *Atlas*, or a planisphere, such as that of Poole Brothers, Chicago, or of Mary Proctor (William Beverly Harrison, 42 East Twentieth Street, New York,) will be helpful for this. The latter planisphere can be had of the publishers at the cost of about $1.00. The atlas costs about $1.50.

EXPERIMENT No. 13. To find the rate of the moon's monthly motion.

(a.) Chart the position of the moon, some evening, with reference to any three bright stars near enough it to permit an estimate (with the aid of the hand as suggested in Experiment No. 2) of their distances from it to be made with some accuracy, and the selected stars should be bright enough to be identifiable on consecutive evenings. Write the estimated distances from the moon to the various stars on the chart. Use a note book having a page large enough to admit of entering two or three evenings' obervations on the same page. Each observation must be dated to the nearest minute. Estimate as nearly as possible from your charts how far the moon has moved among the stars from the first to any subsequent observation, and from this compute the time of a complete revolution of the moon.

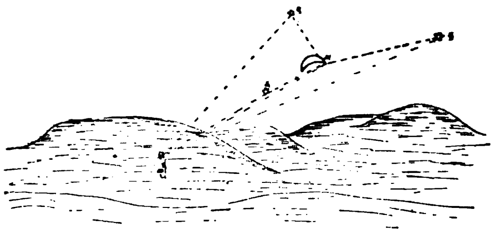


Fig. 14.

(b.) These same distances may be measured with a cross-staff, a sextant, or with sticks.

Query: Will this give the length of a sidereal or of a synodic month?

EXPERIMENT No. 14. Identify the group of stars known as the Great Dipper, or the Great Bear; the Polestar, the Lesser Bear, and Queen Cassiopeia's Chair. The five brightest stars of the latter make a figure resembling a poor capital W.

(a.) Upton's *Atlas*, or Mary Proctor's planisphere will be helpful to any who may need help in this experiment. Note that the line of the two bright stars in the outer edge of the bowl, when prolonged upward about five times the distance which separates them, passes near an isolated bright star. This star is the Polestar, called Polaris, and the two Dipper stars are, from this accident of position, called the "pointers." The Pointers are about 5° apart and this may be used as a standard for estimating the angular distances between heavenly bodies.

[N. B.: The illustrations for these exercises were made by Mr. Roy Lippencott, a student of the Chicago Institute.]

Eleventh and Twelfth Grades

Latin, Eleventh Grade: (ALLEN W. GOULD.) In reading the orations against Catiline very little attempt was made to qualify the views of Cicero. The educational value of these orations consists largely in the fact that Cicero has succeeded in expressing in great literary masterpieces a most vivid idea of the duty a ruler owes to those he rules, as well as the duty each citizen owes to the city, and the wickedness of the man who raises his hand against his fatherland. The young people of to-day need to have these ideas as soon as their minds are capable of receiving them; and the splendid emphasis of Cicero's style with his uncompromising idealism, which may seem rather crude to us, may yet for that very reason be the best adapted to the minds of the growing boy and girl.

But the course of Roman history itself brings the necessary qualification to Cicero's views. This month the class will read some of Cicero's letters written in exile (Ad At. III, 3 and 5; Ad Fam. XIV, 4, 2, 1, 3; Ad Q. Frat. I, 3), and in that way will learn the story of the temporary success of "practical politics." The students will see that Cæsar, Pompey, and Crassus, by making a political "deal," could control the elections, and distribute the offices and the spoils among their followers. Much care will be needed to enable the students to hold fast to these ideals, while recognizing the real obstacles which prevented Cicero from carrying out his ideals—as similar obstacles still prevent men of to-day from living up to theirs, and thus give temporary success to political "deals."

To show the students how completely the government of reason and persuasion had broken down, the pupils will read in April the first sixteen chapters of the oration from Milo. In this way they can see that some strong hand must take the government if the Roman world would be saved from chaos, and they can thus appreciate the work of Cæsar. But the intellectual and spiritual stagnation of the Roman Empire will show the pupils that nations can grow only when they allow individuals to think for themselves.

References: Shuckburgh's *Letters of Cicero*, XXX–XCI; Shuckburgh's *History of Rome*, Ch. XLIII; Trollope's *Life of Cicero*, Vol. I, Ch. 12 and 13, Vol. II, Ch. 1; Forsyth's *Life of Cicero*, Ch. 10–12; Davidson's *Life of Cicero*, Ch. 7 and 8.

Mathematics, Eleventh and Twelfth Grades: (GEORGE W. MYERS.) The work in trigonometry in these grades has revealed many serious weaknesses in their knowledge of algebra and geometry. A thorough review of the principles of these two subjects is deemed imperative to further profitable progress in mathematics. The review will be begun with the solution, or an attempt at solution, of the exercises given on page 487 of the January COURSE OF STUDY. Most of the time for the rest of the year will be given to this review and to the applications of algebra, geometry, and plane trigonometry to practical problems. During March special attention will be given to algebra, the following topics being used as a guide:

I. Symbolism and fundamental operations applied to (a) Integral forms; (b) Fractional forms.

II. Principles involved in treating the Equation.

III. Study of elementary algebraic functions and of the principles of factoring.

IV. Principles for the reduction of fractions. Need and method for finding the Highest Common Factor and Lowest Common Multiple.

V. Principles relating to the Theory of Exponents, Radicals, and Logarithms.

VI. Application of Logarithms to Interest and Discount, Annuities, and to the solution of Exponential Equations.

VII. Exercises in translating symbolical into verbal language, and *vice versa*.

VIII. Complete and Incomplete Quadratics. Conditions that roots shall be of one kind or another.

IX. Treatment of equations in two unknowns, whose solutions lead to Quadratics; Symmetric Equations.

X. Principles relating to Ratio; Proportion and Variation.

XI. Graphic representation of Complex Number.

XII. Discussion and use of Inequalities, and of Indeterminate forms; Clairaut's Problem.

Reference: Bradbury and Emery, *The Academic Algebra.*

General Geology, Eleventh Grade: (WALLACE W. ATWOOD.) In the study of the physiographic regions, already considered, it has been necessary to introduce most of the principles of structural and dynamic geology. Folds and faults have been analyzed, the phenomena of erosion and deposition studied, conformity and unconformity understood, the significance of basal conglomerates seen, and the methods for determining the relations of land and sea during any geologic period have been somewhat fully discussed.

The course is taught from a field standpoint. The practical methods which would be necessary in the field for working out the story of each region are always prominent. The problems set for home-work are field problems, such as the explanation of the loops and canoe-shaped areas among the Appalachian Mountains, the recurrence of the same formations at the surface, the narrow and wide outcrops in the field, etc.

The next regions to be considered are the Great Plains and the Black Hills. Facts from all available sources will be collected, and by interpreting these data the geological history is worked out. In the study of the Black Hills some attention will be given to the deposition and mining of ores. Laboratory work will be planned for the study of the common ores of iron, lead, copper, zinc, gold, silver, and tin.

Art Expression: Chalk-modeling of regions studied and of special scenic features of the regions. Water-colors and crayon will also be used in reproducing typical views.

References: United States Geological Reports; State-Geological Reports; text-books on Geology; National Geographic Society monographs, *Physiography of the United States;* Davis, *Physical Geography;* Irrigation Reports; Van Hise, *Some Principles Controlling the Deposition of Ores,* Trans. Am. Inst. of Mining Engineers, Vol. XXX.

Chemistry, Eleventh and Twelfth Grades: (ALICE P. NORTON.) The class, through their study of the leaf and fruit, have been introduced to a number of the most important elements, have studied their properties, and have learned something of their relations to one another. They have touched upon chemical theory in the study of the atom and molecule, have begun the writing of equations, and have solved some chemical problems. They have used both qualitative and quantitative methods in their analysis and have attained some degree of accuracy in their work.

The first work of next month will be the further analysis of the ash of the leaf. It has already been treated with distilled water, filtered, and the presence of sodium and potassium chloride in the filtrate shown. Several questions now present themselves. How can we further separate the substances remaining in the ash? Is there anything which will dissolve the material apparently insoluble in water? If it is really insoluble in water, how did it become a part of the plant? Can we in any way determine what substances to look for in the ash? The last question will lead us to an inquiry into the constituents of the soil, an investigation which will prove suggestive for future work in geology. The question of solubility will be seen to be a relative one; anything is soluble in water provided we have water enough. The immense amount of water carried into the plant, and the minute quantity of mineral matter deposited at a time will be contrasted. The solvent power of acids will be shown by allowing the pupils to experiment on the solubility of various substances in water and in the different acids. The leaf ash will then be treated with hydrochloric acid, filtered, washed with water, and further treated with nitric acid. The residue, if any, will be carefully examined, and such tests made with it and with the filtrates as the study of the soil suggests.

To bring more clearly before the pupils the results obtained by their work, some of them will make charts showing the percentage composition of the leaf, and others will mount upon cardboard small weighing tubes containing the amounts found of water, carbon, ash, etc., in ten grams of fruit or leaf.

The last part of the month will be devoted to a review of the elements and compounds studied, in their relations to one another, with the especial object of unifying the work of the last two quarters.

French, Eleventh and Twelfth Grades: (LORLEY ADA ASHLÉMAN.) The reading planned for these grades is Lamartine's *Graziella* and George Sand's *La Petite Fadette*.

A discussion on gender was initiated by the pupils during the past month. The following reading lesson embodies the questions of the children and the rules arrived at in response to them.

French Reading Lesson

Hélène. Ne trouvez-vous pas, mademoiselle, que le genre en français soit bien difficile? N'y a-t-il point de règles pour le masculin et le féminin des substantifs? Nous faut-il apprendre le genre de chaque substantif?

Mlle. Guinard. La pratique de la langue, la conversation, la lecture, voilà la meilleure règle que vous puissiez suivre. Pourtant je puis vous donner quelques règles qui vous aideront à reconnaître quelques substantifs masculins et quelques substantifs féminins.

Jean. Ayez la bonté de les écrire sur le tableau noir, afin que nous puissions les copier correctement.

Noms qui sont masculins:

1. Les noms des jours, des mois, des saisons: Le dimanche, un froid janvier, un printemps délicieux.
2. Les noms d' arbres et d' arbustes: Le chêne, le roseau.

Cependant aubépine, épine, vigne, ronce, yeuse sont du genre féminin.

3. Les noms des langues: le français, l'anglais, l'allemand, etc.
4. Les noms des couleurs: le rouge, le blanc, le bleu, etc.
5. Les noms des métaux: l'or, l'argent, le cuivre, le fer, etc.
6. Les noms de la nomenclature decimale, les poids, les mesures la monnaie: le gramme, le mètre, le franc, le centime.
7. Les mots pris substantivement, les noms qui désignent les choses abstraites: le blanc, le goûter, le dîner, le pourquoi, le oui, le non, le qu'en dera-t-on, le beau, le vilain, etc.
8. Les noms de pays, de villes et de rivières, quand ces noms sont terminés par une syllabe masculine: le Danemark, Le Mississipi, Paris, Lyon, Rouen, etc.

Noms qui sont feminins:

1. Les noms de pays, de villes et de rivières, quand ces noms sont terminés par une syllabe féminine: la France, la Seine, etc. Il y a cependant quelques exceptions, comme le Mexique, le Hanover, le Maine, le Rhône, le Danube, le Tibre, le Gange.
2. Les noms de fruits, de légumes et de fleurs, qui ont une terminaison féminine: la pomme, la carotte, la rose. Cependant, héliotrope est du genre masculin.
3. Les noms des vertus et de qualités: la charité, la modestie. Courage, mérite, égoïsme, vice, sont du genre masculin.
4. Les noms des fêtes.—Noël et carnaval sont du genre masculin.

5. Les noms des sciences: la physique, la chimie, la grammaire.

Robert. Je suis votre conseil, mademoiselle, je donne des leçons de français à mon petit frère. Mais, déjà mon élève m'a fait des questions auxquelles je ne puis répondre. Une chose qui m'ennuie beacoup, c'est non seulement le genre des substantifs mais la formation du féminin des adjectifs.

Mlle. Ah, Robert! l'enseignement de la langue française vous réserve encore bien des surprises. (*À Henri.*) Vous voulez m'adresser une question, Henri?

Henri. Oui, mademoiselle, vous nous avez dit il y a quelques semaines que l'article est omis après un adverbe négatif, un adverbe de quantité, et si l'adjectif précède le nom. Pourtant, vous venez de dire, "bien des surprises."

Mlle. Bravo Henri! votre remarque est bonne! Il y a toujours des exceptions, *l'adverbe bien* employé dans le sens de beaucoup prend l'article, mais avec l'adverbe *beaucoup*, vous dites "beaucoup de surprises."

Robert. Voulez-vous me permettre une interruption, mademoiselle? Je vous prie de m'expliquer quelquechose au sujet de l'adjectif. Je veux être à même de répondre à mon petit frère ce soir.

Mlle. Je suis contente de voir que vous insistiez sur ce sujet, il nous entrâinera pourtant un peu loin. Jean, est-ce que l'adjectif s'accorde avec le nom en français?

Jean. Oui, mademoiselle. Avec un nom masculin singulier, l'adjectif est au masculin singulier; avec un nom féminin singulier, l'adjectif est au féminin singulier; avec un nom pluriel, l'adjectif est au pluriel; avec plusieurs noms au singulier, l'adjectif est au pluriel; au féminin pluriel si tous les noms sont féminins, au masculin pluriel si un des noms est au masculin.

Mlle. C'est parfaitement exact, Jean. Je n'aurais pas fait mieux! Robert, quelle lettre faut-il ajouter au masculin pour former le féminin?

Robert. La lettre *e*.

Mlle. C'est cela, faites moi donc une règle.

Robert. Pour former le féminin d'un adjectif, ajouter un *e* au masculin.

Henri. Mais, si l'adjectif est terminé par un *e*?

Mlle. Hélène, que feriez-vous dans ce cas?

Hélène. Je ne le changerai pas.

Mlle. Moi, non plus. Eh bien, Jean, que voulez-vous savoir?

Jean. Veuillez écrire les exceptions à la règle générale.

Mlle. Certainement.

1. Les adjectifs en *el*, *eil*, *en*, *on*, *et* doublent au féminin la consonne finale avant d'ajouter l'*e* muet: bon, bonne; muet, muette; cruel, cruelle; pareil, pareille.

Cependant les six adjectifs suivants terminés en *et*, et leurs composés, ont un seul *t* au féminin et prennent un accent grave sur l'*e*: complet, complète; concret, concrète; discret, discrète; inquiet, inquiète; replet, replète; secret, secrète.

2. Les adjectifs terminés en *f* changent *f* en *ve*: actif, active.

3. Les adjectifs terminés en *x* changent *x* en *se*: heureux, heureuse. Doux, roux, faux, font douce, rousse, fausse au féminin.

4. Les adjectifs terminés en *eur* changent *eur* en *euse*: trompeur, trompeuse.

Exceptions:

(a) La plupart des adjectifs en *teur* font le féminin en *trice*: conducteur, conductrice.

(b) Enchanteur fait enchanteresse; pêcheur fait pécheresse; vengeur fait vengeresse.

(c) Les adjectifs en *érieur*, comme antérieur, etc., et majeur, forment leur féminin d'après la règle générale, par l'addition d'un *e* muet.

5. Bas, gras, gros, las, sot, nul, gentil, épais bellot, vieillot exprès doublent aussi la finale au féminin: basse, grasse, etc.

6. Beau, fou, mou, vieux, nouveau, font au féminin belle, folle, molle, vieille, nouvelle. (Au masculin, devant les mots commençant par une voyelle ou par un *h* muet, ces adjectifs font bel, fol, mol, vieil, nouvel; un bel arbre, un vieil homme.)

7. Masculin: bénin, malin, blanc, franc, sec, frais, public; féminin: bénigne, maligne, blanche, franche, sèche, fraîche, publique. Masculin: caduc, turc, grec, long, oblong, tiers, favori; féminin: caduque, turque, grecque, longue, oblongue, tierce, favorite; masculin: coi; féminin: coite.

8. Les adjectifs terminés en *gu* prennent un tréma sur l'*e* du féminin: aigu, aiguë.

History, Twelfth Grade: (EMILY J. RICE.) Subject: American History. As the necessity for the new Constitution has been shown in the previous month's work, the students are ready to trace the action of our first Congress under its provisions and the effect of such action upon the country. Let them realize as fully as possible the difficulties in the way of establishing our form of government. Picture clearly Federal Hall, the meeting of Congress, the most prominent individuals composing that body, and the ceremonies of Washington's inaugural. The immediate necessities of the country will show what action Congress must take, and reference to the Constitution itself will show its powers.

I. Discuss possible methods of raising money. Which will arouse least opposition? What means do we use now? What were tried then? With what result? What must be done with the money raised? Compare our present war debt with that of the Revolutionary War.

II. Show how people were divided in opinion as to the amount of power that should be given to Congress. Would it be well to have only one political party in our own time? Are there any likenesses between the theories of the political parties of our time and those of Washington's time? Let the students discuss the amount of power that a government should have.

III. Compare the conditions of government in France at that time and those in our own country. Give a vivid account of the storming of the Bastile, and tell something of the condition of different classes of society in France. [Story of LaFayette.] When war was declared by France and England in 1793, why did France count upon our aid? Let the students give arguments for and against giving them help. Trace the division of sentiment in the country on that question, and show that this division coincided in a general way with that on our financial policy. Trace Washington's difficulties in following a policy of neutrality; Génet's influence and English interference with our commerce. The anger of the people over Jay's treaty. Read Washington's arguments for neutrality in his *Farewell Address.* The children may give arguments for and against our mingling in foreign wars at the present time. Dangers of the departure from the so-called "Policy of the Fathers." The Philippine question will give point to this discussion.

References: McMaster, *History of the People of the United States*, Vol. I; Schouler, *History of the United States*, Vol. I; Hart, *Formation of the Union;* Frothingham, *Rise of the Republic;* Lodge, *Life of Washington. Washington's Farewell Address* will be found in full in the Old South Leaflets. *William Maclay's Diary* gives the best account of Washington's inauguration, and other accounts will be found in the Century for April, 1889, and in Harper's Magazine. For Washington's receptions, see *Library of American Literature*, Vol. IV, p. 346, and for anecdotes of Washington the same, Vol. IV, p. 25. For the story of *Hail, Columbia!* see McMaster, Vol. II, p. 376.

German, Twelfth Grade: (DR. BENIGNUS.) German continues to be correlated with history. The study for March will be the characteristic features of the American Constitution compared with those of the constitution of the German empire. The acquired knowledge will be reported verbally to strengthen oral expression, and in writing to develop style.

In literature, having shown during February the views of the Romantic School, and the service this school rendered to the spiritual life of Germany, the study in March will treat of the representatives of the older Romanticists: the forerunner and first lyric poet of this school, Novalis (Friedrich von Hardenberg); the founders and chiefs: Ludwig Tieck, the brothers August Wilhelm and Friedrich von Schlegel; the younger Romanticists: Clemens Brentano, Achim von Arnim; their influence upon the Grimm brothers, Jakob and Wilhelm, and upon Joseph Görres; the lyric poets: Friedrich Freiherr de la Motte Fouqué, and Joseph Freiherr von Eichendorff. The other Romanticists will be studied in April. The interrelations of German and English literature will always be emphasized.

For memorizing, two poems of Eichendorff have been selected.

Meeresstille

Ich seh' von des Schiffes Rande
  Tief in die Flut hinein:
Gebirge und grüne Lande
  Und Trümmer im falben Schein
Und zackige Türme im Grunde,
  Wie ich's oft im Traum mir gedacht,
Das dämmert alles da unten
  Als wie eine prächtige Nacht.

Seekönig auf seiner Warte
  Sitzt in der Dämmrung tief,
Als ob er mit langem Barte
  Über seiner Harfe schlief;
Da kommen und gehen die Schiffe
  Vorüber, er merkt es kaum;
Von seinem Korallenriffe
  Grüsst er sie wie im Traum.

Joseph Freiherr von Eichendorff, 1788-1857,
"Romanzen."

Morgengebet

O wunderbares, tiefes Schweigen,
  Wie einsam ist's noch auf der Welt!
Die Wälder nur sich leise neigen,
  Als ging der Herr durchs stille Feld.

Ich fühl' mich recht wie neugeschaffen.
  Wo ist die Sorge nun und Not?
Was mich noch gestern wollt' erschlaffen,
  Ich schäm' mich des im Morgenrot.

Die Welt mit ihrem Gram und Glücke
  Will ich ein Pilger frohbereit
Betreten nur wie eine Brücke
  Zu dir, Herr, übern Strom der Zeit.

Und buhlt mein Lied, auf Weltgunst lauernd
  Um schnöden Sold der Eitelkeit:
Zerschlag' mein Saitenspiel, und schauernd
  Schweig ich vor dir in Ewigkeit.

"Geistliche Lieder."

Music: (MISS GOODRICH.) High School and Ensemble Songs: *He shall give His Angels,* and *The Lord is my Shepherd,* from the collection of Seven Sentences, by Mrs. Crosby Adams; *Pussy Willow's Secret,* Songs of Life and Nature; *March, Come, Happy Spring, Springtime is Returning,* and *Prayer,* Modern Music Series, Third Book.

Morning Exercises

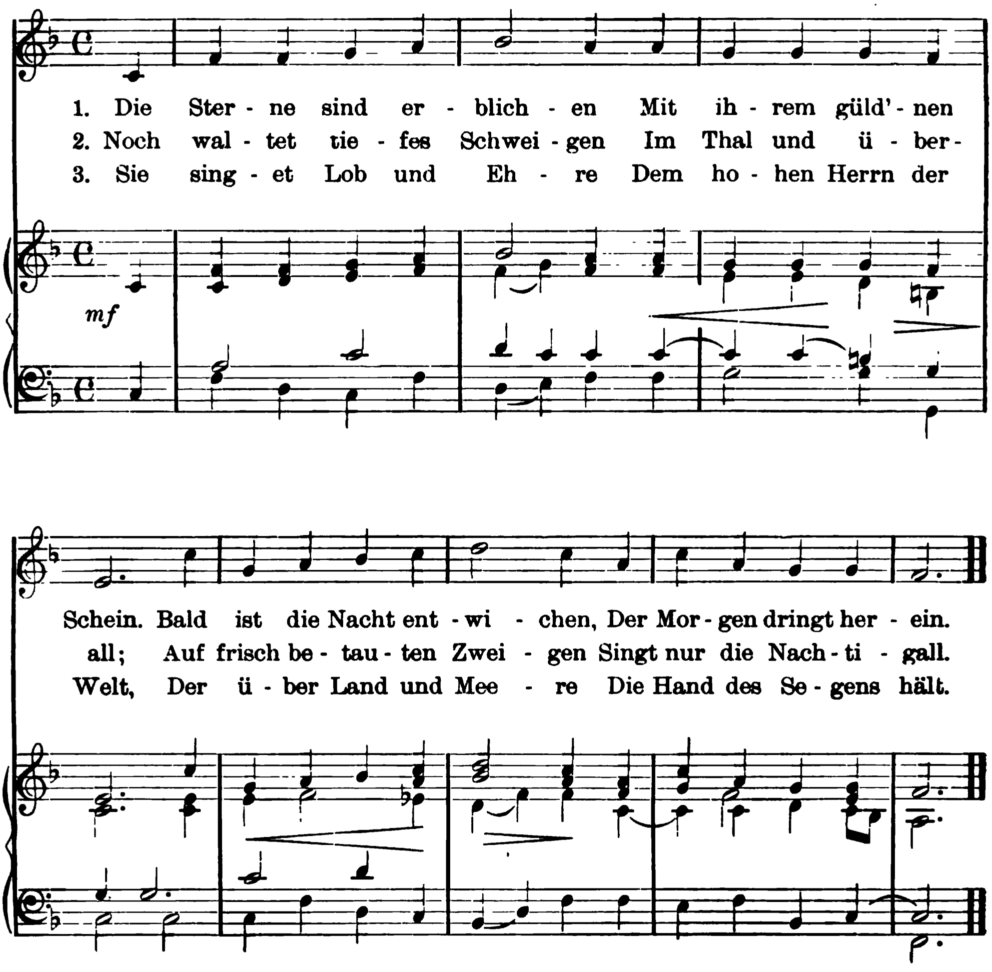
MARCH	SUBJECT	LEADER
1.	Nature's Awakening, in Middle English Verse	Miss Crawford.
5.	Street Scene in India	Mrs. Flint.
6.	The Eskimo	Mrs. Atwood.
7.	Dramatization—La Belle Nivernaise	Mlle. Ashléman.
8.	Current Events	Mr. Kroh.
12.	Quotations About Music	Miss Goodrich.
13.	Bridge Engineering	Mr. Carley.
14.	Fioretti di St. Francesco	Mr. Duncan.
15.	Current Events	Mrs. Thomsen.
19.	Ernest Seton-Thompson	Miss Champlin.
20.	A Visit to a Flour Mill	Mr. Bass.
21.	Count Rumford	Mrs. Norton.
22.	Current Events	Miss Cooke.

Historical Events and Birthdays

March	1	William Dean Howells	1837
"	6	Michael Angelo	1474
"	6	Gen. Philip Sheridan	1831
"	8	Austen H. Layard	1817
"	11	Torquato Tasso	1544
"	12	Thos. Buchanan Read	1822
"	15	Andrew Jackson	1767
"	16	James Madison	1751
"	18	John C. Calhoun	1782
"	19	David Livingston	1813
"	28	John Comenius	1592
"	29	Raphael	1483

Morgenlied

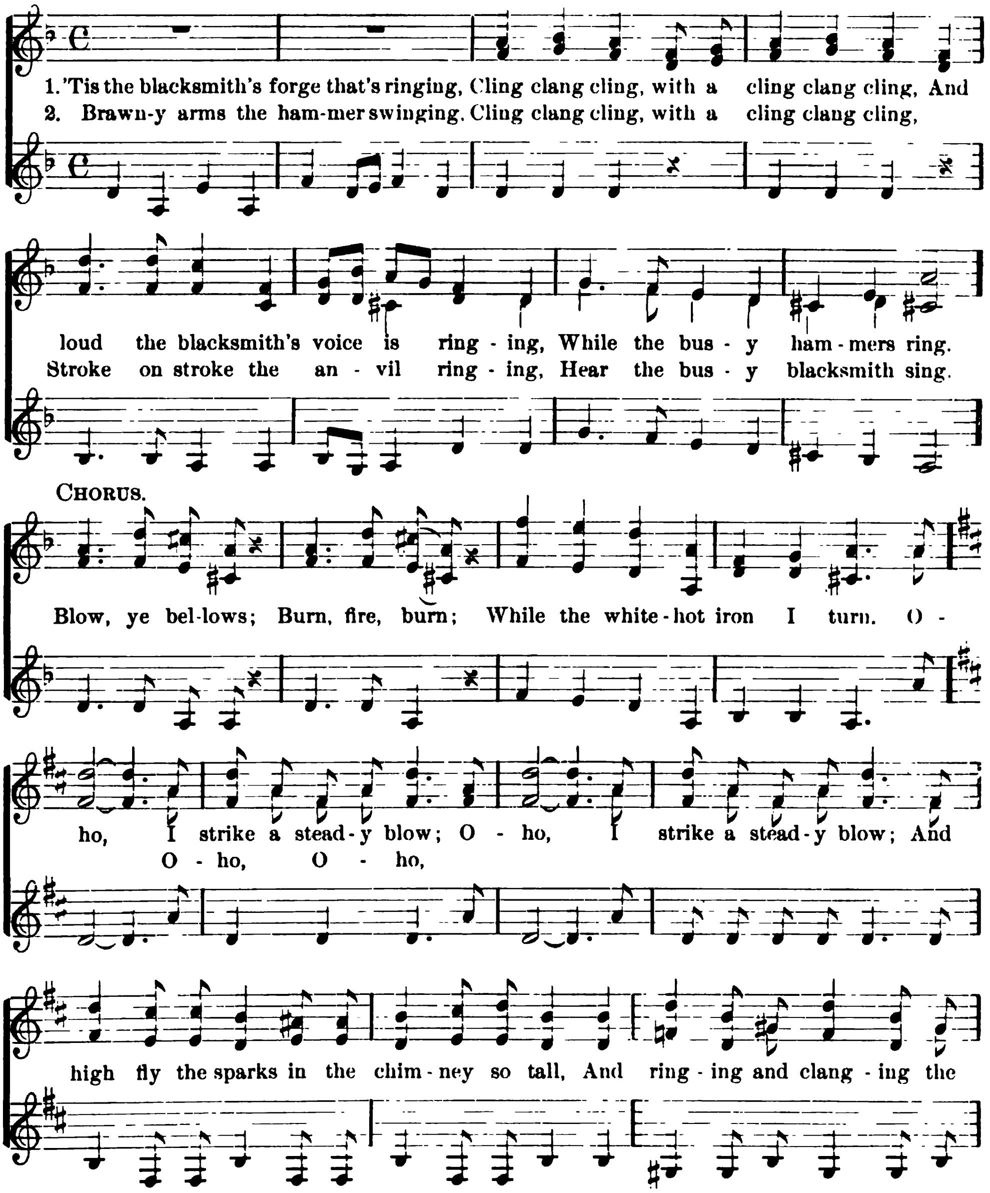
Hoffman aus Fallersleben, 1826. Joseph Gersbach, 1821.


1. Die Ster - ne sind er - blich - en Mit ih - rem güld' - nen
2. Noch wal - tet tie - fes Schwei - gen Im Thal und ü - ber-
3. Sie sing - et Lob und Eh - re Dem ho - hen Herrn der
mf
Schein. Bald ist die Nacht ent - wi - chen, Der Mor - gen dringt her - ein.
all; Auf frisch be - tau - ten Zwei - gen Singt nur die Nach - ti - gall.
Welt, Der ü - ber Land und Mee - re Die Hand des Se - gens hält.

4 Er hat die Nacht vertrieben:
Ihr Kindlein, fürchtet nichts!
Stets kommt zu seinen Lieben
Der Vater alles Lichts.

The Forge*

Mrs. ALICE C. D. RILEY. From the Bohemian, by Mrs. JESSIE L. GAYNOR.


1. 'Tis the blacksmith's forge that's ringing, Cling clang cling, with a cling clang cling, And
2. Brawn-y arms the ham-mer swinging, Cling clang cling, with a cling clang cling,
loud the blacksmith's voice is ring - ing, While the bus - y ham - mers ring.
Stroke on stroke the an - vil ring - ing, Hear the bus - y blacksmith sing.
CHORUS.
Blow, ye bel-lows; Burn, fire, burn; While the white-hot iron I turn. O -
ho, I strike a stead-y blow; O - ho, I strike a stead-y blow; And
O - ho, O - ho,
high fly the sparks in the chim - ney so tall, And ring - ing and clang - ing the

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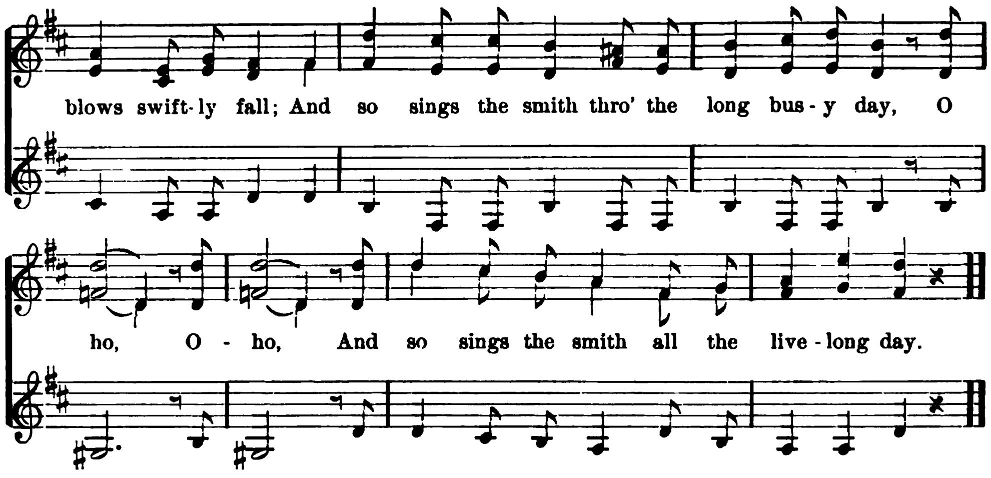
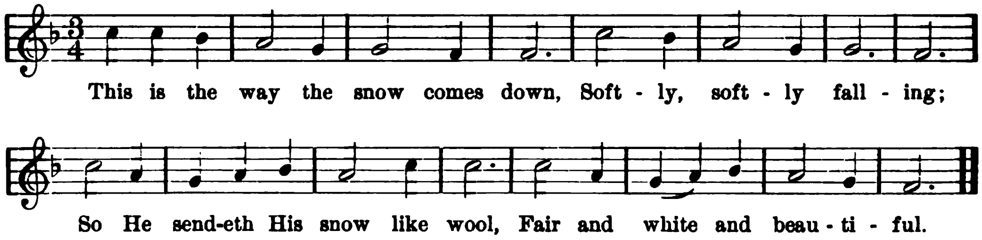
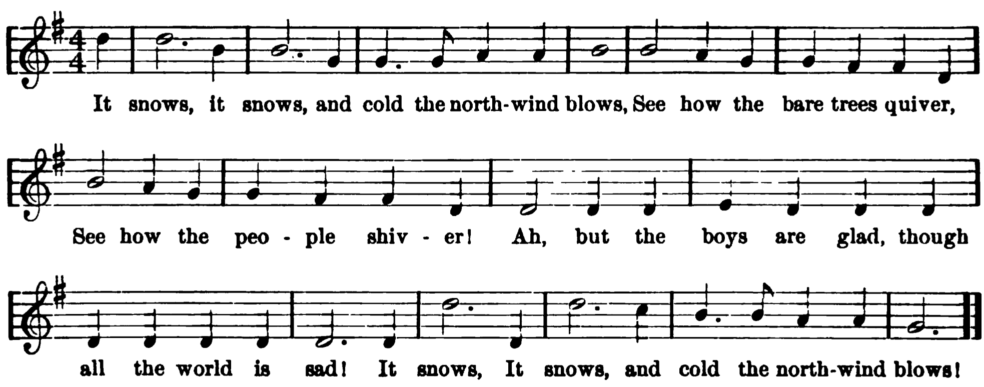

blows swift-ly fall; And so sings the smith thro' the long bus-y day, O
ho, O - ho, And so sings the smith all the live-long day.

Original Work of Fourth Grade Pupils

No. 1


This is the way the snow comes down, Soft - ly, soft - ly fall - ing;
So He send-eth His snow like wool, Fair and white and beau - ti - ful.

No. 2


It snows, it snows, and cold the north-wind blows, See how the bare trees quiver,
See how the peo - ple shiv - er! Ah, but the boys are glad, though
all the world is sad! It snows, It snows, and cold the north-wind blows!

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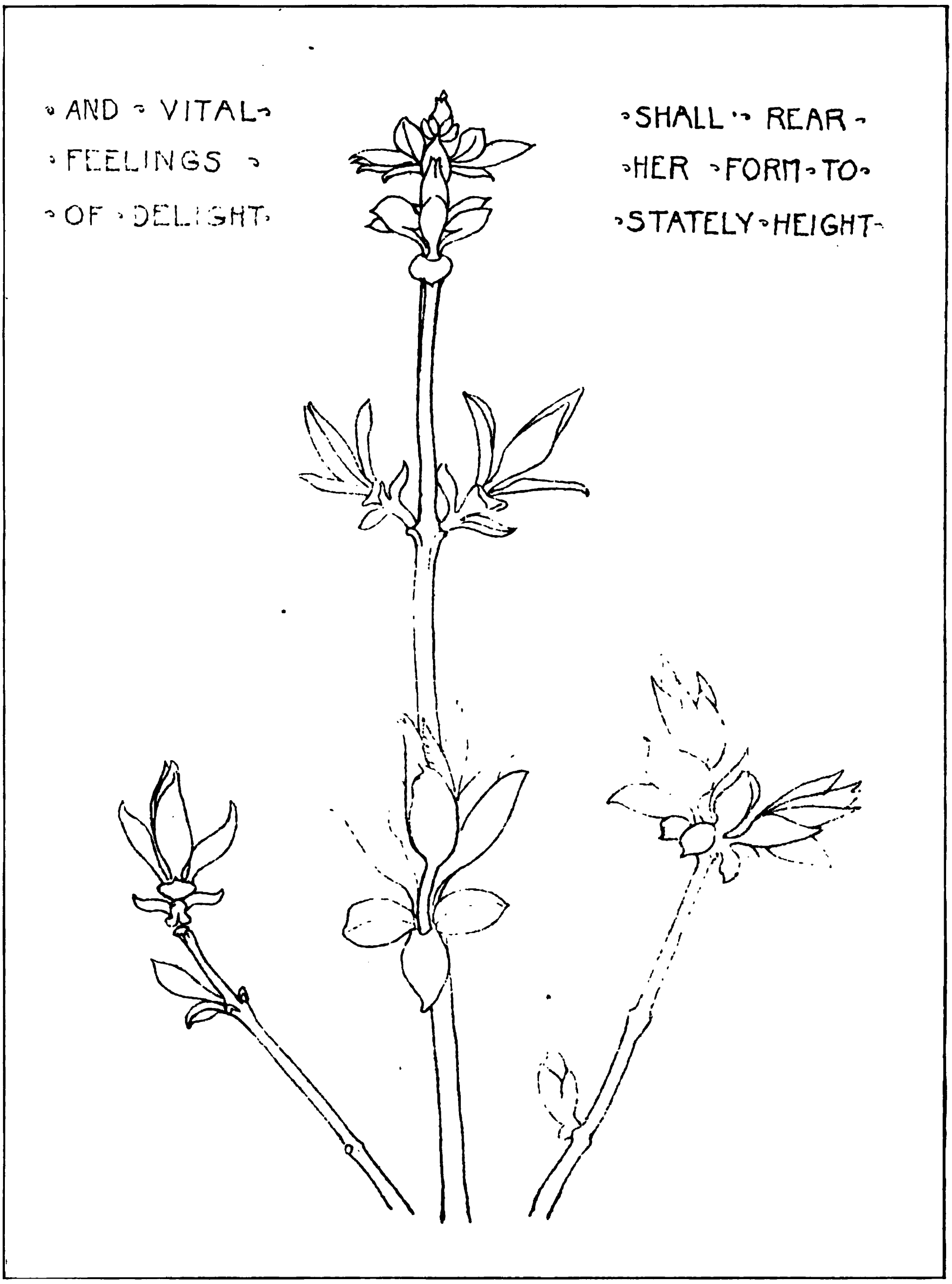

A SPRING STUDY

See Mr. Duncan's article on "Art," page 693

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THE COURSE OF STUDY

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In Memory of Anna E. Bryan

Miss Anna E. Bryan, whose life was a blessing to all who knew her, and indeed to the whole world, has entered upon the second stage of life. In her calendar, upon the day of her death, were found these words: "*Ye shall know the truth, and the truth shall make you free.*" In tender memory of Miss Bryan's enthusiasm, energy, and purity, the following words of Froebel are printed for the daily use of every one who tries to teach little children. We need to learn from her who has gone from us, but who will be ever with us, that "the letter killeth, but the spirit giveth life."—F. W. P.

"The prescriptive, interfering education, indeed, can be justified only on two grounds, either because it teaches the clear, living thought, self-evident truth, or because it holds up a life whose ideal value has been established in experience. But where self-evident, living, absolute truth rules, the eternal principle itself reigns, as it were, and will on this account maintain a passive, following character. For the living thought, the eternal divine principle as such demands and requires free self-activity and self-determination on the part of man, the being created for freedom in the image of God.

"Again, a life whose ideal value has been perfectly established in experience never aims *to serve as model in its form*, but only in its essence, in its spirit. *It is the greatest mistake to suppose that spiritual, human perfection can serve as a model in its form.* This accounts for the common experience that the taking of such external manifestations of perfection as examples, instead of elevating mankind, *checks, nay, represses, its development.*

"Jesus himself, therefore, in his life and in his teachings, constantly opposed the imitation of external perfection. Only spiritual, striving, living perfection is to be held fast as an ideal; its external manifestation, on the other hand, its form, should not be limited. The highest and most perfect life which we, as Christians, behold in Jesus—the highest known to mankind—is the life which found the primordial and ultimate reason of its existence clearly and distinctly in its own being; a life which, in accordance with the eternal law, came from the eternally creating all-life, self-acting, and self-poised. This highest eternally perfect life itself would have each human being again become a similar image of the eternal ideal, so that each again might become a similar ideal for himself and others; it would have each human being developed from within, self-active and free, in accordance with the eternal law. This is, indeed, the problem and the aim of all education in instruction and training; there can be and should be no other. We see, then, that even the eternal ideal is following, passive, in its requirements concerning the form of being.

"Nevertheless, in its inner essence (and we see this in experience), the living thought, the eternal spiritual ideal, ought to be and is categorical and mandatory in its manifestations; and we see it, indeed, sternly mandatory, inexorable, and inflexible, but only when the requirement appears as a pronounced necessity in the essence of the whole, as well as in the nature of the individual, and can be recognized as such in him to whom it is addressed; only where the ideal speaks as the organ of necessity, and, therefore, always relatively. The ideal becomes mandatory only where it supposes that the person addressed enters into the reason of the requirement with serene, childlike faith, or with clear, manly insight. *It is true, in word or example, the ideal is mandatory in all these cases, but always only with reference to the spirit and inner life, never with reference to outer form.*

"In good education, then, in genuine instruction, in true training, necessity should call forth freedom; law, self-determination; external compulsion, inner free-will; external hate, inner love. Where hatred brings forth hatred; law, dishonesty and crime; compulsion, slavery; necessity, servitude; where opression destroys and debases; where severity and harshness give rise to stubbornness and deceit—all education is abortive. In order to avoid the latter and to secure the former, all prescription should be adapted to the pupil's nature and needs, and secure his co-operation. This is the case when all education in instruction and training, in spite of its necessarily categorical character, bears in all details and ramifications the irrefutable and irresistible impress that the one who makes the demand is himself strictly and unavoidably subject to an eternally ruling law, to an unavoidable eternal necessity, and that, therefore, *all despotism is banished.*

"All true education in training and instruction should, therefore, at every moment, in every demand and regulation, be simultaneously double-sided—giving and taking, uniting and dividing, prescribing and following, active and passive, positive yet giving scope, firm and yielding; and the pupil should be similarly conditioned; but between the two, between educator and pupil, between request and obedience, there should invisibly rule a third something, to which educator and pupil are equally subject. *This third something is the right, the best, necessarily conditioned and expressed without arbitrariness in the circumstances.* The calm recognition, the clear knowledge, and the serene, cheerful obedience to the rule, to this third something, is the particular feature that should be constantly and clearly manifest in the bearing and conduct of the educator and teacher, and often firmly and sternly emphasized by him. The child, the pupil, has a very keen feeling, a very clear apprehension, and rarely fails to distinguish whether what the educator, the teacher, or the father says or requests is personal or arbitrary, or whether it is expressed by him as a general law and necessity.

"This obedience, this trustful yielding to an unchangeable third principle to which pupil and teacher are equally subject, should appear even in the smallest details of every demand of the educator and teacher. Hence, the general formula of instruction is: *Do this, and observe what follows in this particular case from thy action, and to what knowledge it leads thee.* Similarly, the precept for life in general and for every one is: *Exhibit only thy spiritual essence, thy life, in the external, and by means of the external, in thy actions, and observe the requirements of thy inner being and its nature.*

"Jesus himself charges man in and with this precept, to acknowledge the divinity of his mission and of his inner life, as well as the truth of his teaching; and this is, therefore, the precept that opens the way to the knowledge of all life in its origin and nature, as well as of all truth.

"This explains and justifies, too, the next requirement, and indicates, at the same time, the manner of its fulfillment: *The educator, the teacher, should make the individual and particular general, the general particular and individual, and elucidate both in life; he should make the external internal, and the internal external, and indicate the necessary unity of both; he should consider the finite in the light of the infinite, and the infinite in the light of the finite, and harmonize both in life; he should see and perceive the divine essence in whatever is human, trace the nature of man to God, and seek to exhibit both within one another in life.*"

Some Fundamental Principles of Education

Blessed are the poor in spirit, for theirs is the kingdom of heaven.

The kingdom of heaven is within you.

Keep back thy servant also from *presumptuous* sins; let them not have dominion over me; then shall I be upright, and I shall be innocent from the *great* transgression.

Blessed are they that mourn, for they shall be comforted.

Blessed are the meek, for they shall inherit the earth.

Education is the development of the right attitude of the mind toward truth.

Blessed are they which do hunger and thirst after righteousness, for they shall be filled.

He that doeth righteousness is righteous.

For I was an hungered, and ye gave me meat; I was thirsty, and ye gave me drink; I was a stranger, and ye took me in.

Naked, and ye clothed me; I was sick, and ye visited me; I was in prison, and ye came unto me.

Blessed are the merciful, for they shall obtain mercy.

Blessed are the pure in heart, for they shall see God.

Blessed are the peacemakers, for they shall be called the children of God.

Blessed are they which are persecuted for righteousness' sake, for theirs is the kingdom of heaven.

If any man will do His will, he shall know of the doctrine.

Though I speak with the tongues of men and of angels, and have not charity, I am become as sounding brass, or a tinkling cymbal.

And though I have the gift of prophecy, and understand all mysteries, and all knowledge; and though I have all faith, so that I could remove mountains, and have not charity, *I am nothing*.

Syllabus of a Discussion on Self-Government in School

(Prepared for the Faculty Meeting.)

Wilbur S. Jackman

I. The question of government is paramount in school as it is paramount in national life. Government in the one is a counterpart of that in the other.

1. The administration of government is for the purpose of maintaining those harmonious relationships among people which constitute the condition called order.

2. The reason for the administration of government is to secure economy of effort to the individual.

3. Government must afford the greatest possible liberty to the individuals, compatible with the integrity of the whole, and it must secure a perpetuation of freedom.

II. The Jeffersonian principle, "All men are created free and equal," is, under any conception of government, unalterably true.

1. Almost all discussion of this principle has turned upon the application and meaning of the term "equal." Many of the difficulties in government have arisen from a false interpretation of the term "free."

2. In the past all forms of government have rested upon the theory of the freedom of the will. Modern science denies the truth of this theory. (See Haeckel's *Riddle of the Universe.*)

3. If the scientist is right, how will this in the future affect all which pertains to the so-called freedom of the individual?

4. Whether the being acts from choice within, or from impulse without, the question of environment is equally important.

III. Out of the social relations of mankind are developed laws that are as inexorable as any of the physical laws that relate to the material world.

1. As the violation of a physical law inevitably means distress or death to the physical life of the individual, so a violation of a social law inevitably means social deterioration, and ultimately social death.

2. Both laws — all laws — are natural laws, unalterable and inexorable. The individual is not more rigidly conditioned by the soil and climate than he is by his fellows.

IV. In the past the individual has been considered from the wrong point of view.

1. The "Total Depravity" theory demands that the individual be controlled by a fiat from without.

2. The evolution theory regards the individual as capable of growth; born with organs and instincts capable of refined adaptations, but profoundly ignorant of all conditions of physical and social life.

V. In governing the child, the same rules should hold respecting his social and civil life that are observed in developing his physical life.

1. Mortality statistics of childhood show how weak the child is in the face of his physical environment, More than half of those born die under the age of five. Physical safety depends upon the child being surrounded by countless prohibitions, the nature of which he cannot understand.

2. The countless breaches of the social relations of which childhood is unwittingly guilty, as well as the inmates of houses of correction, show how helpless the child is in the face of his social environment, and

arbitrary prohibitions are as necessary here as in his physical life.

VI. Prohibitive measures from without are rendered unnecessary as a knowledge of all social and physical conditions grows.

As no one can fully command complete knowledge of all conditions, either physical or social, some prohibitive measures must always remain.

VII. True growth into freedom implies that *when a privilege is granted a corresponding responsibility is entailed.*

1. Most people rejoice in freedom, but chafe under the natural responsibility; this is due either to ignorance or viciousness.

2. It is impossible for children to feel responsibility regarding many of the affairs of social life in which they participate—hence they deserve, at the hands of their elders, protection through prohibitive measures.

VIII. It is evident that democracy in national life is possible only through a training in democracy in school-life.

Despotism in the schoolroom trains for anarchy out of it.

IX. Government, whether of a democracy or a despotism, always implies control.

1. Control in a democracy is as absolute and as rigid as in a despotism.

2. Self-government in the school is frequently interpreted to mean absence of all control—anarchy.

X. Democratic government in the school or out of it becomes efficient only so far as it organizes the good elements of society as a social and civil force against the evil. The former always preponderates over the latter.

1. The function of the teacher is to use the wisdom of his years in assisting in this organization.

2. A despotic attitude on the part of the teacher forces the good to train with the bad, and to aid and abet the evil-doer.

3. The good instincts in the schoolroom are always the salvation of the school, whether the teacher is blind to them or not.

XI. The laws of society are enacted to control the ignorant and the idle.

1. As the work of the school enlists the vital interest of childhood, the difficulties of government recede to the vanishing-point.

XII. The machinery of a democratic form of government is not less complex than that of a despotism.

In a democracy the source of power is in the many, the immediate control in the hands of the few.

XIII. Laws are the last resort of society. Therefore, in the school, none should be enacted by the school democracy that are not forced upon it by the peculiar conditions of the school-life itself.

Community Life as a Basis for a Course of Study

Gudrun Thorne-Thomsen

The ideal school is the ideal community. The teacher is an organizer of community life. The one true end and aim of all human life is to assist in the evolution of community life.—*Francis W. Parker.*

Education is not a preparation for life; it is life.

The tragic weakness of the present school is that it endeavors to prepare future members of the social order in a medium in which the conditions of the social spirit are eminently wanting.

The only true education comes through the stimulation of the child's powers by the demands of the social situation in which he finds himself.

Education must occur through forms of life that are worth living for their own sake.—*John Dewey.*

I. Characteristics of community life:

1. Aim: To promote the highest welfare of each one of its members.

2. The work of the community must be social; that is, having the above aim for its goal.

3. Proper organization: co-operation, interdependence, specialization.

4. Democratic spirit. Each member having a voice as to means and ways of realizing this aim; each member doing the work for which he is best fitted.

5. Knowledge is acquired under the impulse of necessity, in order to reinforce and conduct activity, and thus it becomes an organic part of the being, a ready tool.

In an ideal community the work is highly differentiated, and so organized that every individual finds something to do according to interests and ability.

6. The highest qualities of body, mind, and soul are needed in order to participate in social work.

7. Such qualities as courage, responsibility, faithfulness, habits of study, powers of observation, keenness of intellect, endurance and strength of body, taste and artistic tendencies, represent the fitness of the individual to live in present society, and will be developed and strengthened, because absolutely necessary for social work.

II. Characteristics of the citizen in this community:

1. Each individual should have a thorough understanding of present social conditions, their needs and tendencies.

2. He should be equipped with a power and strong desire to lift these to a higher level.

III. What community life in the school should be:

1. The school should give the best conditions for acquiring social experience.

2. It should be so organized as to give the child opportunities to use this experience for the good of the community.

3. The individual should gain experience by living, and should help the community by his living.

4. The work engaged in should have social meaning and social value. By social work is meant all the activities that make social life possible.

5. The children should feel this purpose and direction in all their work.

6. That organization of the community should be adopted which allows social work to be carried out in the most effective, economical way.

7. Selection of knowledge and subject-matter should be made according to needs of social work.

Only when the work is organized on a social basis will the community feel itself an organic unit, and the individual members integral parts of the whole.

IV. Some phases of social activities in the school.

1. Care of the school buildings and grounds. Care of material and housekeeping. Repair of building and material. Washing and sweeping of the buildings. Painting and decorations of rooms.

2. A store as distributing point, giving out supplies for social work of the school, and getting supplies from the shops, garden, etc.

3. Farm and garden. Milking, churning, making cheese and butter, etc. Taking care of animals, poultry, etc. Forestry.

4. Kitchen and bakery.

5. Weaving, spinning, sewing.

6. Carpenter and blacksmith shops.

7. Library and bookbinding.

8. Theater and music hall.

9. Studio: clay modeling, drawing, painting.

10. Pottery.

V. Relation of the school and the larger community.

1. There should be close contact with life and the activities which sustain it, in

order that the child may realize the great forces which are molding our society, also the agents through which these forces operate.

2. Every store, shop, factory, bakery, etc., is full of educative material. These places should become part of our school, not merely places to be occasionally visited.

3. We have in this city of Chicago unparalleled opportunities to bring the child into contact with life. Almost every industrial activity and every phase of social life is here represented. Chicago shows us on a stupendous scale a laboratory where industrial and social problems are being worked out before our very eyes. Applied science meets the child at every step; the geography of the whole earth is reflected in the resources which unceasingly flow in; the history of the race finds here an expression in the social life of two million people. This is the environment in which the child lives, moves, and has his being.

4. This environment takes hold of the child and educates him in an unsystematic, haphazard, but forcible manner.

However complicated this environment may be, it is, after all, the greatest educational factor in the child's life.

5. It becomes our work as teachers to recognize this education; not to suppress and isolate it, but to guide, reinforce, and control it.

6. The school proper should mirror this outside social and industrial life in a simplified form, adapted to the needs of the school community. In the study of outside life and activities, the child finds the inspiration and purpose that will lift his own work to a higher level and enable him to determine his own place in the community.

7. The study of life as it pulsates outside school presents two aspects: the scientific, or industrial, and the social.

The scientific deals with the means and ways by which activities are carried on—that is, their tools and methods; the social deals with the individuals who are engaged in these activities. Both aspects should receive due attention by actual contact.

8. Study of lives of workers; their social environment, organization, wages, etc.; how they serve our society, and how society serves them; how and where they live, etc.

The child should see in the worker a social factor through whom the evolutionary forces of society are shaping our civilization.

The workers should be teachers of our children; they are living sources of information; in them knowledge has become organic.

The children should enter into a sympathetic relationship with the countless workers, who in different ways add to the sum total of our civilization, thereby realizing the cost at which our daily lives are carried on.

9. They should feel the dignity of work, however humble it may be, if serving our society.

They will see the function of knowledge as an instrument in promoting our whole social and industrial life.

They will realize their own position as workers and their relation to the smaller community in which they live.

VI. Knowledge matter:

1. What, how much, how, and at what time supplied, depends upon kind and needs of social activity.

2. Social work is the unifying principle; knowledge, discipline, habits of study are subordinate to that, are means to an end.

3. Character will be developed by doing work that requires character; politeness, courage, faithfulness, punctuality, etc., will be developed through work that demands these qualities; they will become the means

through whose application the success of the work is made possible, and will grow by constant use, just as our muscles do. These qualities are latent in the child, and await an opportunity to spring into action.

4. Altruistic motive will be part of the individual, when the work to be done can be accomplished under no other motive. Selfishness, or living for self alone, is simply impossible when social work is to be done.

5. Used as a tool in social activity, knowledge becomes an organic part of the being, a living power.

6. The question is not what subjects to select, nor what qualities of body and mind to develop in the child. When the proper activities and occupations are found, every subject will have a definite value and a definite place in our educational scheme.

VII. The subjects:

1. Nature presents the child the material and knowledge necessary for his activities; man, the social meaning and direction.

Progress in the knowledge and application of forces and resources continually changes the organization of society.

2. The purpose of nature study is to acquaint the individual with natural powers and resources that are available for human progress; the purpose of the study of man is to find that organization, social, political, and industrial, which will secure the best use of these tools for the good of present society.

3. Physical training. Man during countless ages has been engaged in certain fundamental activities; by and for these activities his body attained its present development. In our educational system knowledge has been divorced from the physical activities which underlie it, and has been pursued for its own sake. In order to counteract the evil effects of this purely intellectual education upon the human body, different systems of gymnastics were evolved. Gymnastics is then a substitute for that physical activity which has a definite social end, and which is the birthright of every child.

4. When social work is given to the child, the whole being will respond, and a natural organic development will be the result.

5. The various modes of expression should become organs by which the individual manipulates and organizes knowledge and material for the good of society.

6. Art should become a social factor in penetrating and lifting every activity; it should add personal interpretation to expression.

7. The child should come into intimate personal contact with nature through activities which encourage and necessitate outdoor life.

This view of the school is based both upon social and psychological considerations.

VIII. If child study has done anything for us, it has taught us to respect the individual child, and has warned us against mass teaching; that the children should be grouped according to stage of development, interests, and tendencies, and not according to age. In our prevailing way of teaching and presenting subjects there is very little individual choice, and comparatively few lines of work are open to the individual child. We have few means of meeting the demands caused by differences in development and interests in the children. In social work there are countless phases and varieties; we can meet all stages of development. For the pursuit of a single social activity a great diversity of ability and maturity is needed. The big boy can work side by side with the little child, but in a different capacity, each mutually helping the other and promoting the work. Every child can proceed according to ability and power. It is not necessary to keep step with anybody, because there may be as many varieties of work as there are individuals.

1. Every activity in real life is organized on this basis; the workers represent every grade of power and ability, and the various forms of work fall to the persons who meet the necessary requirements.

2. In order to fit the individual for the proper kind of work, and in order to follow the stages in his development which necessitate constant changes, we shall have to study the individual child as never before.

3. Such a scheme would necessarily modify everything that makes up present school-life — recitations, divisions into classes, etc.; and not only that, but it would also modify the ordinary school building, with surroundings. As a place to do social work, it must needs be something other than an aggregation of classrooms.

IX. Function of the teacher:

1. To study the child, his stage of development and tendencies; to help the child to find the proper activities in which to be engaged at different stages of development.

2. To supervise and organize the work of the community for its purpose; to guide the pupils as to material and knowledge necessary for their work.

3. The teachers cannot be specialists in all the work engaged in, but they should understand the psychological and social meaning of the different activities; that is, their influence on the child and on the community.

4. The purpose is not to make specialists of the children in these social activities, any more than we are now training historians, scientists, and artists in the various subjects taught at this time; but they are given because they constitute the only kind of work which takes hold of and educates the whole being of each individual, and puts him in right relation to society.

Local History

Emily J. Rice

The recognition of the social aim of history supplies a practical test by which we may measure the value of the subject-matter of the study. It teaches us to place emphasis upon the material which the immediate environment affords. It shows that historical knowledge should be related to the circle of present experience. This does not mean that we must begin at the present in our teaching and work backward to remote times, but that the past must be used as a means of interpreting present social experiences.

With the younger children time is a matter of no great concern. The motives which govern the actions of men and their relation to their surroundings may be just as apparent in a distant period as in one near at hand. The important thing is to introduce the child to those fundamental activities which condition life in all ages, those primitive necessities of which he can appreciate the value and in which he may share by his own handiwork. The earliest lessons should center about the industrial life that the children can reproduce in occupations, in story-telling, and dramatic representation. By these activities we may deepen their experiences until they gain some abiding impression of their real importance.

Again, as the child gains in power to appreciate the varied phases of social life and to reason from conditions in a definite way, study of the immediate environment furnishes the best basis for understanding historical material which lies beyond the reach of the observation. In local history, all the conditions are present for forming clear and definite images. Events have occurred in familiar places, or in places which may be seen. It is easy to trace the effects of the topography of the region upon its history. The children may visit historic sites and collect information from the "oldest inhabitants." Often there are local museums containing relics of various kinds.

This work upon the immediate surroundings gives a feeling of the reality of history that can be secured in no other way. As the children reproduce the story of the growth of their own town or city from material, much of which is within their own observation, history becomes a living thing, a vital influence upon present life.

Local history is not only a starting-point for the course of study, but each part of the course should also find its basis in present industrial, social, and political conditions. The relation of past and present must be kept constantly in view in our teaching, to the end that our pupils may feel the significance of the study. The present is the point of departure, and to it we must constantly return to find a motive for research. The value of the study of civics is greatly enhanced if it goes hand in hand with the study of history, because it is necessary to understand the evolution of the present condition in order to appreciate that condition or to predict its future. The study of history fails of its highest purpose when it is taught as a thing of the past, rather than as a force in the immediate present.

As we learn to appreciate the connection and relation of past and present, local industries and institutions and current events find a larger place in our teaching. By this change we may hope to enlarge the interest of our pupils in civic conditions and to make them active workers toward the best social and political ideals for our city and country.

For the studies in local history and civics of this year in our own school, see outlines for Third and Fourth Grades in geography and history in past numbers of the COURSE OF STUDY, for Sixth Grade in February, and for Eighth Grade in October and November. Some topics covered are the following: Roads, transportation, fire department, water system, park systems, museums and art galleries, architecture, foreign colonies in the city, civic beauty.

The following suggestions may be of use to the teachers of the Pedagogic Class and to others beginning the study of Chicago with children eight or nine years of age.

The Early History of Chicago: Directions to Teachers.

I. By blackboard drawings and oral descriptions, present conditions for a comparison of Chicago as it is to-day and this region before the city was built. Let the children study the streets of the city in their geography lessons, and the ideas of its site gained in geography may be used in the history.

II. Picture the vegetation and animals of the region. Add to your blackboard picture a group of Indians who, in their roving, come to this place and wish to remain for a time. Let the children suggest their modes of travel as compared with ours. They may next consider the shelter that could have been obtained here, and draw pictures of the people at work making their wigwams, and tell how the work could be done. Compare the Indian house with ours and let children suggest reasons for differences. Let them express both conditions in drawing and writing.

III. The children may discover from conditions previously presented what kinds of food the Indians could obtain here and how it would be obtained. Consider in some detail their tools as compared with ours, their mode of building a fire, of cooking, of making dishes, and of traveling. In each case, compare with our own, and express conclusions in drawing and writing. After the children have worked out each problem as well as they can, help them to clearer images by use of objects in Historical Cabinet, as stone tools, and by writing reading lessons for them. The stories of *Hiawatha's Sailing, Fishing*, and *Fasting* may be used here.

IV. The children may make a model of an Indian canoe and model tools in clay. Let the making depend upon what was done in earlier grades.

V. Begin the study of the exploration and settlement of this region by telling the story of Marquette. Show pictures of his home at Mackinac and tell something of the life at the mission. Tell of his purpose in joining Joliet. The children may suggest how he will travel and what he will carry with him. Trace his journey, showing pictures of the region around Green Bay, the Fox River, the Wisconsin, the Mississippi, and the Illinois. Do not use a map. Draw as you talk, if possible. The meeting with the Illinois Indians and the feast given them should be told in detail, and their return by way of the Illinois River and the Chicago portage made clear.

VI. In the second journey emphasize the interest of Marquette in the Illinois Indians, his long stay in Chicago, what he found here, how he lived, his journal, his welcome by the Illinois, and his attempt to reach his home again. Show the unselfishness of Marquette's motives and the force of his character.

References: Beckwith (in Fergus' *Historical Series*), *The Illinois and Indiana Indians*. For work of Indians, see Fiske's *Discovery of America*, vol. I. For pictures, see Kirkland's *History of Chicago*, and Andreas' *History of Cook County*. For *Marquette's Journal*, see *History of Cook County*. For story of Marquette, see Parkman's *La Salle and the Great West*, and McMurry's *Pioneer History Stories*.

La Salle: I. Tell the story of La Salle to show that he accomplished what Marquette had undertaken, the following of the Mississippi to its mouth, and also made heroic efforts to establish settlements among the Illinois Indians, whom Marquette had taught. La Salle's energy and perseverance make this a good character study. Show pictures and make blackboard drawings to illustrate the region through which he traveled, his mode of travel, of obtaining food, of trading with the Indians, and building forts. The children should make frequent drawings to express their conclusions from the conditions presented.

II. Emphasize the following points:

1. La Salle at Fort Frontenac, making plans for his long journey westward; the setting out in canoes and sailboat; his companions.

2. At Niagara Falls; building the Griffin. Let the children decide from the pictures whether it must be built above or below the falls; how built; appearance; what the Indians thought of it.

3. Journey to Mackinac; sojourn at the home of Marquette.

4. Journey on Lake Michigan; finding the deserted Illinois village; kind of village; first meeting with the Illinois; Fort Crèvecœur built; Tonty.

5. Journey back to Canada; hardships; news of the destruction of the fort; return to the Illinois; appearance of the village; effort to find Tonty.

6. New plans for a settlement that shall protect the Illinois from their enemies, the Iroquois, and shall make a basis for fur trading and for exploration; councils with the Indians in preparation for such a settlement.

7. Crossing the Chicago portage; journey to the mouth of the Mississippi; building of Fort St. Louis at Starved Rock; why built there? Full description of the settlement there, the fort on the rock and the Indian village surrounding it. See map of this settlement in *La Salle and the Great West*. Life in the fort. Let the children make a miniature settlement with sand, stone, clay, and cardboard.

8. Give briefly the story of La Salle's unsuccessful efforts to reach his Illinois home by coming from France to the mouth of the Mississippi. Tonty at the fort; his efforts to rescue La Salle's companions.

References: *La Salle and the Great West*, by Parkman, gives the best story. McMurry's *Pioneer History Stories* also gives the story. For the characters of La Salle and of Tonty and for life at Starved Rock, see Mrs. Catherwood's *Story of Tonty*.

Village Life: I. Picture people coming here for the fur trade and tell of the treaty with the Indians by which our government got the land on which Chicago is situated. Describe the fur trade.

II. Tell the story of the building of Fort Dearborn and of the coming of the Kinzie family. Let the children construct a fort of cardboard, and build the village of the early days. Describe life in the village, and finally the difficulties with the Indians, the massacre, the return of the settlers, and the rebuilding of the fort. By means of stories, describe the need of paved streets, the first road-building, the ferry across the river, the first bridges, the earliest houses, and the modes of traveling by land and water to reach the place. Tell of the building-stone brought the long distance from the lower lakes, and of the discovery of good building-stone in the vicinity of Chicago. Show samples of Illinois limestone (Lockport) from the school museum, and also samples of other building-stone now used in Chicago.

III. Describe the journey of settlers coming from the East to the Western farms, and the life on the farm. The story of the Lincoln family may be used as a type of these Western settlers. Describe the transportation of farm products to Chicago. The children may give reasons for the growth of the city.

IV. Excursion. If possible, visit the rooms of the Chicago Historical Society to see the pictures there, the site of Fort Dearborn, and the monuments erected on the spot where the massacre took place.

References: Andreas, *History of Cook County;* Kirkland, *History of Chicago;* The *Fergus Papers*. The best of these for our purpose are: *Fort Dearborn*, John Wentworth (16), *Annals of Chicago* (9), *Reminiscences of Early Chicago*, Charles Cleaver (19), and *Annals of Chicago*, Balestier (1). *Early Records of Chicago* (published by Jansen, McClurg & Co., 1876) contains many interesting points in regard to building material, roads, bridges, pavements and traveling. Mrs. Kinzie's *Wau-Bun* gives a good account of the first fort and the massacre.

Suggestions for Course in Civics: (JENNIE HALL, Chicago Normal School, April, 1899.)

SEPTEMBER: Visit a congested district. Collect so far as possible accurate data on following topics: 1. Streets—width, pavement, gutters, park, sweeping, sprinkling; 2. Alleys—width, pavement, cleanliness, garbage boxes, garbage wagons, final destination of garbage; 3. Sidewalks; 4. Transportation — number of lines, points of communication, time, cost; 5. Houses—building line, lawns, material, repair, value, plumbing, fire-protection, light, size, number of inhabitants, owner, rent; 6. Places of amusement; 7. Schools and attendance; 8. Churches; 9. Occupation of people; 10. Education of people; 11. Business—quality of goods, prices.

OCTOBER: Study Englewood according to September outline. Study a fine residence district, as in September.

NOVEMBER: I. Study stock-yards district, as in September. Added points: 1. Sewerage; 2. Smoke.

II. Visit a foreign colony: 1. Occupation; 2. Education; 3. English spoken? 4. Naturalized? 5. Naturalization laws.

DECEMBER: I. Down-town Conditions: 1. Reasons for high buildings; 2. Buildings—fire protection, light and air, size of offices, an instance of different interests represented in one building, rents; 3. Streets—refuse boxes, as in September; 4. Reason for concentration of business houses; 5. Police service; 6. Smoke; 7. Street venders—license; 8. Begging.

II. Causes of condition and means of bettering them. Whenever the question of cause comes up, it should be considered, but not necessarily answered then. Collect more data, then consider the question again.

III. City Government: 1. Officers—duties, salaries, how appointed; 2. Taxes—how levied, how collected, how used; 3. Building regulations; 4. Meat and milk regulations; 5. Smoke regulations; 6. Truant laws; 7. System of parks —where placed, how maintained; 8. Water and sewerage systems; 9. Regulations of franchise.

Visit city council; read city reports.

JANUARY: Settlements: 1. Number; 2. Projectors; 3. Purpose; 4. Visit settlement and collect data—number of residents, work of residents, number of visitors, number and character of clubs and classes, fitting of settlement building, expense of settlement, conditions and needs of community; 5. History of settlement idea.

FEBRUARY: Visit Pullman: 1. Study original plan; (a) Purpose; (b) Effect; (c) History; 2. Plan ideal community; 3. Ideal tenement house —make plan, get prices of construction; 4. Lay out small model of ideal community with ideal buildings.

MARCH: Prisons, etc.: 1. What people need public care; 2. Full list of Chicago institutions of public care; 3. Individual or group reports on different prisons, reformatories, asylums, hospitals, poor-house; 4. Private charitable institutions—projectors, maintenance, method of work, effect of work; 5. Most helpful kind of charity.

APRIL AND MAY: Industries: Different industries represented in Chicago. 1. Numbers following them; 2. Comparative wages; 3. Upon what do wages depend? 4. Length of hours; 5. Overcrowded occupations; 6. Value of occupation to other people; 7. Danger and nervous strain of work; 8. Pleasure in work; 9. Division of labor—cause, effect; 10. Interrelation of different occupations; 11. Report on sweat-shops; 12. Building—light, ventilation, exits, fire-protection, precautions against accident, company's care for injured, space per worker; 13. Residence district—distance from business, relation between rent and wages; 14. Trades unions—organization, purpose, expense, effectiveness; 15. Study of William Morris.

JUNE: Relation between Chicago and the country: 1. Telegraph and cable lines; 2. Telephone lines—visit telephone exchange; 3. Newspapers—visit an office; 4. Railroads and steamer lines—points of communication, cost of transportation, number of passengers in per day, number of passengers out per day, kinds and amount of imports per day, kinds and amount of exports per day; how are goods received? how are goods distributed? number of hands through which goods pass, number of profits on goods. Visit commission houses in South Water Street.

During the whole year carefully tabulated reports of all visits and readings and plans should be made and filed for record. Also art studies and photographs of people, places, and things should be made and filed. A blank map of Chicago should be gradually filled in until at the end of the year it will show factories, churches, schools, parks, theaters, libraries, art galleries, museums, prisons, reformatories, asylums, hospitals, police-stations, fire-stations, car-lines, railroads.

Art

John Duncan Antoinette Hollister Clara Mitchell

Nature Study: This month we shall witness the miracle of returning life to the trees and flowers, the awakening of the pallid sleeping beauty of the winter to the flushed and active beauty of the spring. In our science work we shall study the ways and means of the change; in our art work we shall celebrate the wonder and loveliness of the effects.

In the Pedagogic School the students will each select a tree or shrub for especial study and make a series of drawings in pencil and in water-color, marking each stage of the process of development. The accompanying drawings of the lilac will illustrate our meaning. Figure 1 shows the determined buds clad in their armor to resist the last desperate sallies of the retreating winter. Figure 2 (see also frontispiece) is a picture of the twig a little later, when the leaf-buds open with stately yet girlish grace, Athena-like in uprightness and poise. In Figure 3 the flower-buds have come, Athena has become sportive, is metamorphosed into Aphrodite, the whole tree laughs and shakes its tassels of lilac bells. Figures 4 and 5 exhibit the structure of the flower-bunch, and we see that in the arrangement of the buds upon the twig, of the leaves upon the stem, of the blossom on the stalk, to the petals upon the flower, the tree through its development never departs from its leading idea of construction; and we marvel at the strange variety and still stranger uniformity of Mother Nature's works as she plays her thousand variations upon her simple themes.

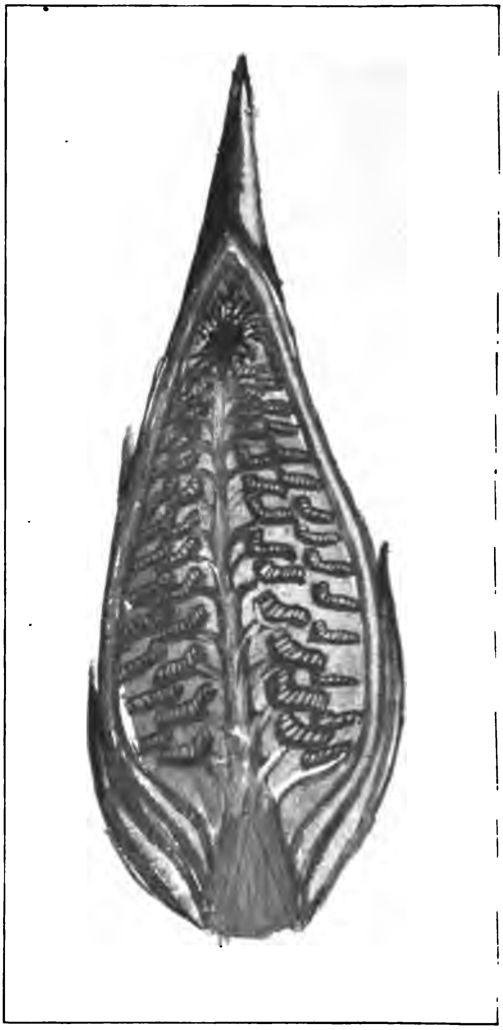
In our drawings we shall not be content to merely copy the forms and colors of leaf and branch, but shall attempt to enter into a kindly comprehension of them, discovering in these silent creatures something that corresponds with ourselves—with our own destinies, beings nourished and blighted by the selfsame fate. Nor do we read these things into them, making the "pathetic fallacy" that Ruskin warns us against; they are expressed in every life, though they are only to be seen by sympathetic eyes.

We shall find a hundred suggestions for beautiful patterns for our applied arts in the flower and leaf buds of the spring, and the nearest vacant lot will be our manual of design.

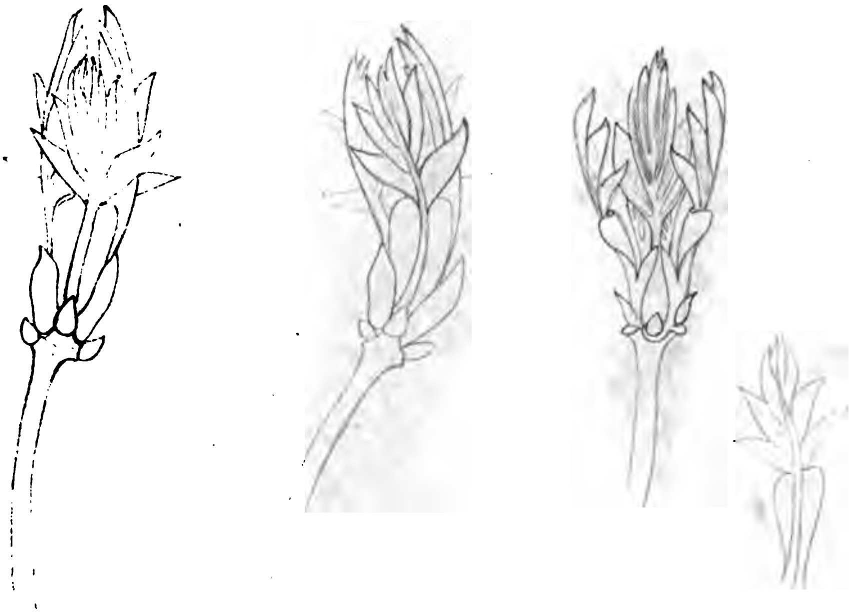
Pottery: The Pedagogic Class will do some work in colored and glazed pottery, using simple processes, but at least trying to make things that can be of some little service at home. The work done by the first-year students has turned out fairly well, and we print a few outline drawings that hint at the variety of shapes devised and carried into execution by the students.

Illustration: We will study primary reading matter and story-telling with Mrs. Thomsen, and will resume the work of illustration and essay the making of pictures of all the things that children love.

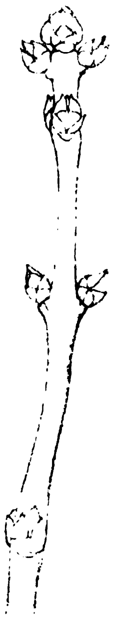
Textiles: The study made of spring buds and blossoms will be applied to designs for ornamenting the costumes needed by children of the First Grade in their play of the *Sleeping Beauty*. These patterns will be executed in satin stitch, outline stitch, and French knots on linen or muslin. Original designs for book-bags will be done in cross-stitch on coarse canvas and felt. The weaving already commenced will be continued.



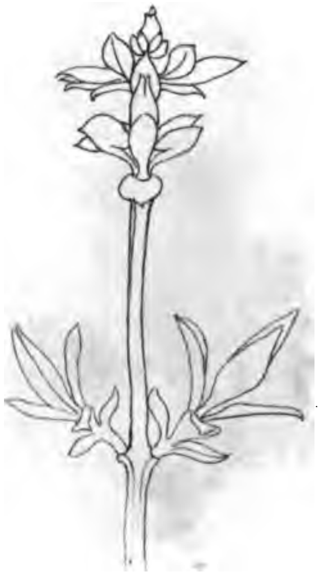
SECTION OF FLOWER-BUD OF POPLAR



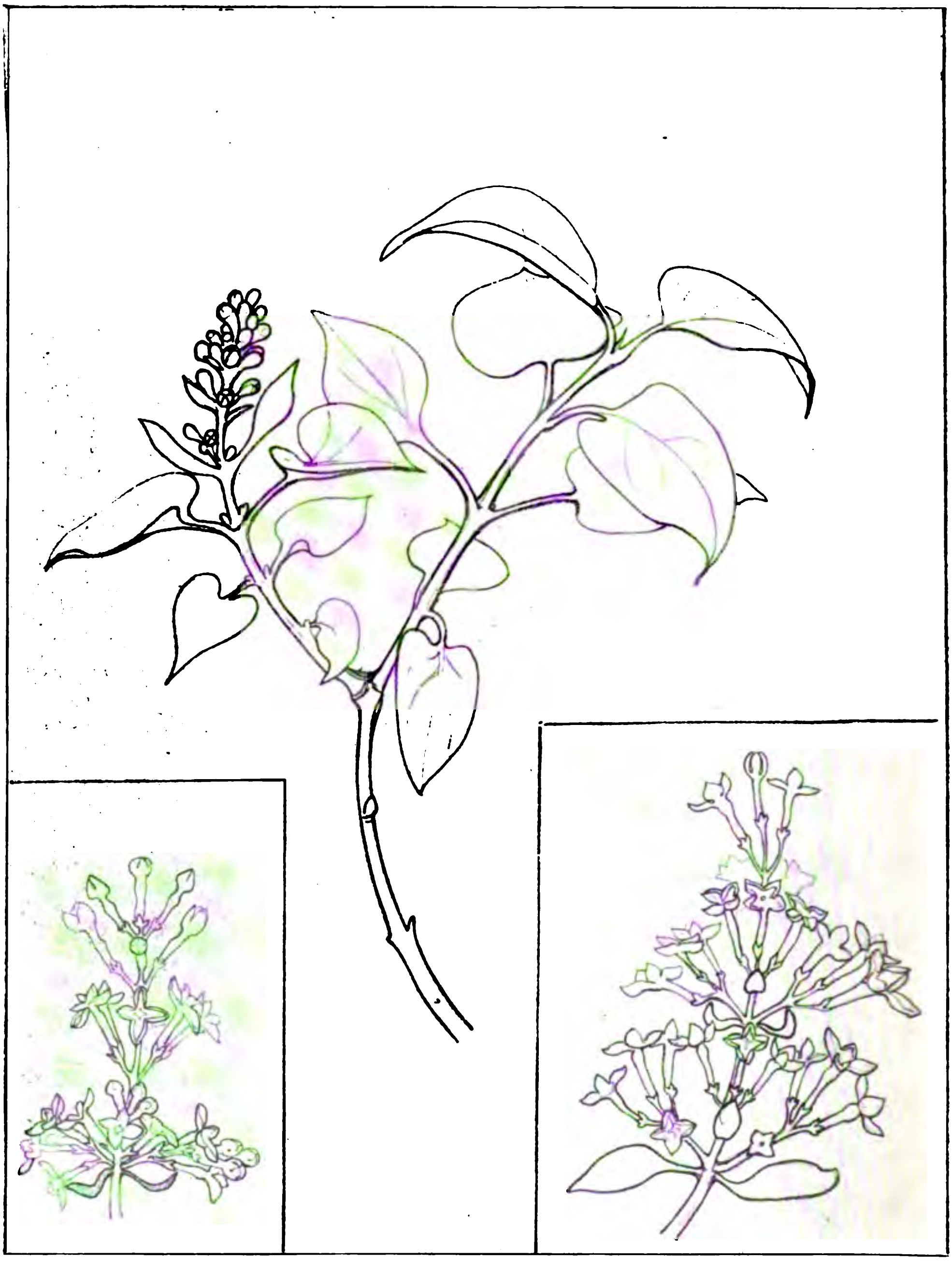
LEAF-BUDS OF ASH



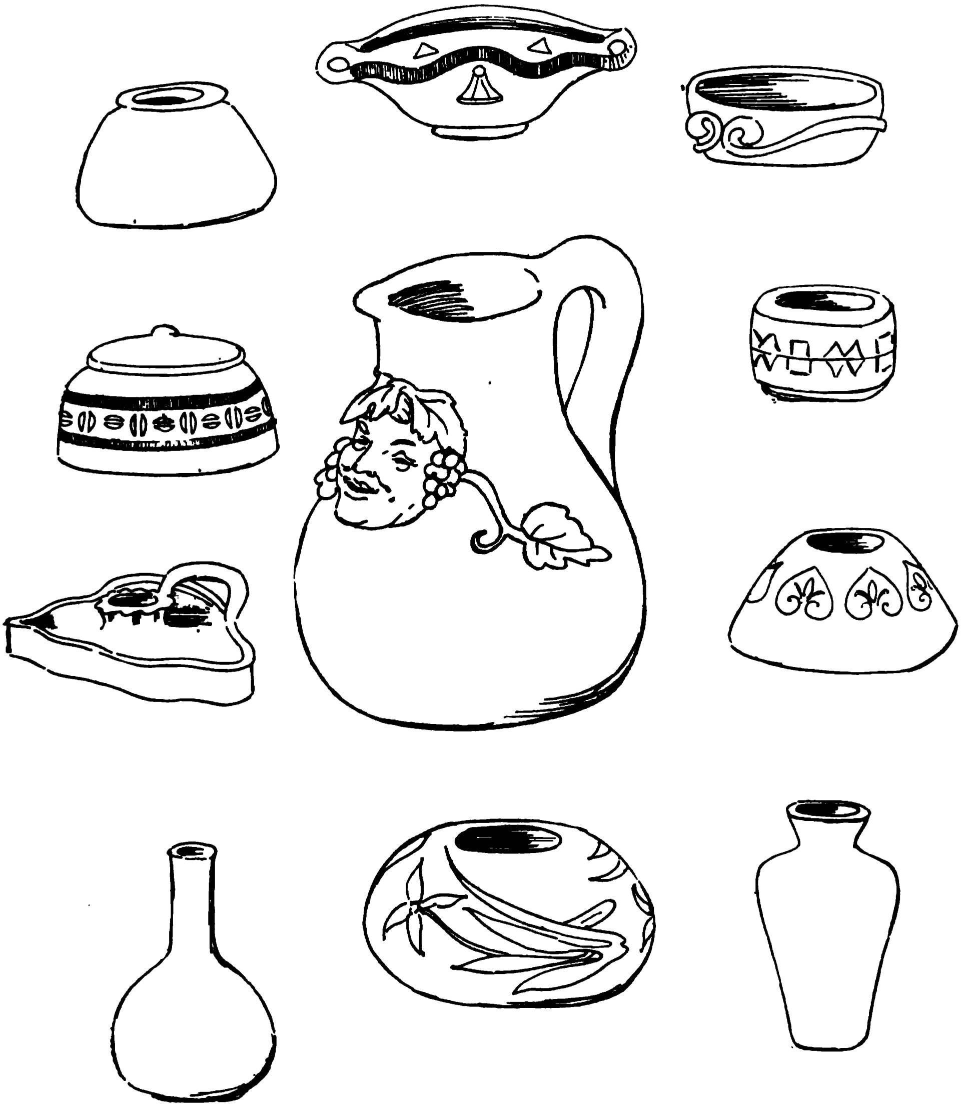
THE LILAC
FIG. 1



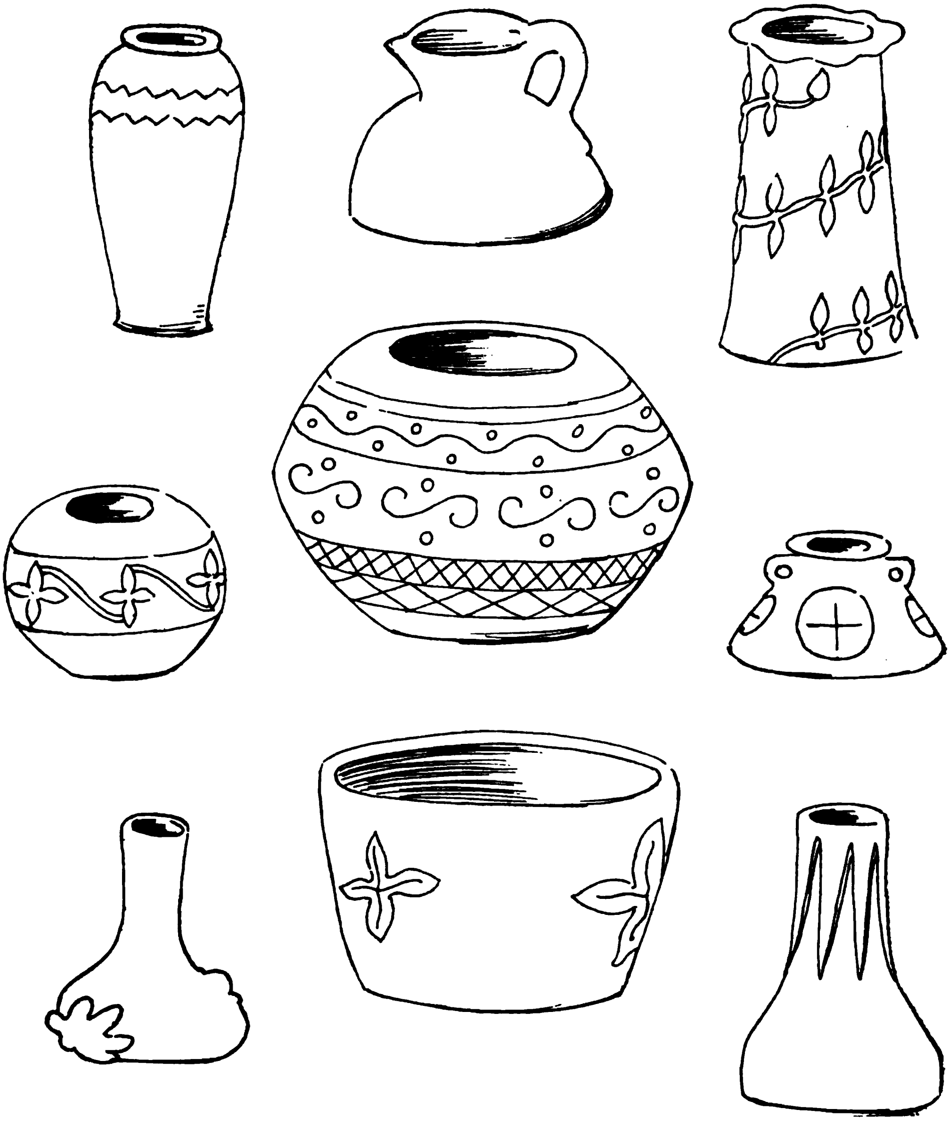
THE LILAC
FIG. 2



THE LILAC
FIGS. 3, 4, and 5



STUDENTS' WORK IN POTTERY



STUDENTS' WORK IN POTTERY

Pedagogic Course in Nature Study

Charles W. Carman

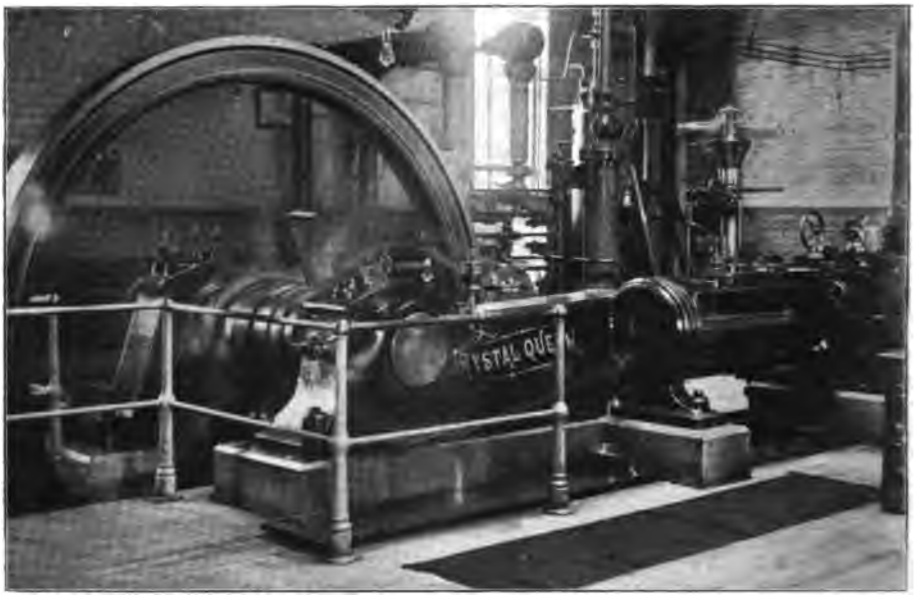
ARTIFICIAL REFRIGERATING PLANT

NOTE.—The outline for the spring quarter is adapted from Jackman's *Nature Study for Grammar Grades*.

The nature study work for April is divided into three general groups. The first group will include those observations that embrace the phenomena of mechanics most closely associated with the student's daily life. An effort will be made to trace the mechanics of nature during the transition of winter into spring. During the winter months enormous forces are lying dormant—hibernating, we may say—but as the spring opens these forces seem to vie with each other for first place in the new season. It is well to observe, as far as possible, how these transitions are accomplished. These forces operate silently and incessantly, and the student who learns the processes must be equally persistent in his observations and study.

The second group will include those observations that embrace the astronomical and meteorological phenomena most potent in the transition of winter into spring. An effort will be made to trace the functions of the sun, atmosphere, water, and soils in the great transformation that is taking place. We may study and wonder at the marvelous mechanics of ocean steamships, of railway transportations, and of manufacturing plants, but all are as the toys of children compared with the forces put forth in the industries of nature.

The third group will include those observations that embrace the biological, zoölogical, and botanical phenomena that appear in consequence of the advancing season.



ICE-MAKING MACHINE

References: FIRST GROUP. Jackman, *Nature Study for Grammar Grades*, Ch. XI, pp. 93-106, Ch. XIII, pp. 114-122, Ch. XVII, pp. 136-144; Ch. XXV, pp. 192-212.

I. Plan for work under first group.

1. Visit the boiler-room of the Chicago Institute and select a small piece of coal from the coal-bin. Take it to the chemical laboratory, break it in pieces not larger than a pea, place them in a six-inch, hard-glass test-tube, heat the tube until escaping gas will ignite at the mouth of the tube. Place the residue on a piece of platinum or porcelain, and heat in a Bunsen flame until the residue turns gray.

2. Visit the nearest gas-manufacturing plant. Observe the retorts, the coolers, the washers, the purifiers, and the reservoirs. Make notes and sketches preparatory to a report in the classroom. Note especially the "by-products" and determine the uses made of them.

3. Visit an artificial ice-making and refrigerating plant. Observe the method of compressing the ammonia gas, the coolers, the "freezers," and the products. Make notes and sketches preparatory to a report in the classroom. Compare the artificial and natural forces employed in ice-formation. Return to the boiler-room and observe the fire-box under the boiler. Observe the structure of the boiler. Trace the flue to the chimney. Trace the steam-pipes from the boiler to the various radiators throughout the building. Trace the returns to the boiler-room. In like manner observe the fire-boxes, boilers, and steam-pipes in the basement of the Crilly block, just opposite the Institute building. Observe the reading of the steam-gauges, and compare with the reading of the steam-gauge on the Institute boiler. Trace the steam-pipes from the boiler to the engine, through the steam-chest to the cylinder and to the exhaust. Trace the connection of the piston to the shaft of the engine. Trace the connections of the engine shaft to the armature of the electro-dynamic machine used to furnish the building with electric current. Trace the parts of the electro-dynamic machine and the relation of the parts to each other. Notice carefully how they are functioned. Trace the wires from the machine to the switch-board. Sketch the board as a whole, and note the functions of the various switches, bus-bars, and instruments. More detailed study is expected on the return to the classroom and laboratory.

4. Visit the Edison electric light and power station located just north of the Newberry Library. Make the observations indicated above. Trace the wires from the station to the Chicago Institute building, and into the switchboard of the same. Trace and sketch all the wires leading from the switchboard to the

lamp-outlets in the basement. Dissect a lamp-socket and sketch all the parts. Dissect a "burned-out" lamp and sketch all its parts. Read the meter on the switchboard in the basement. (Note: A similar meter will be shown and dissected in the classroom.) Compute the current used when all the lamps, incandescent and arc, in the Institute are operating. Compute the diameters, weight, and cost of the copper wire necessary to conduct the current from the station to the lamps in the Institute. Compute the cost of the sockets and lamps from data furnished.

5. Locate the telephones connected with the Institute's intercommunicating system. Note the number of wires leading from each telephone, and the method of connecting to each. A similar telephone will be shown and dissected in the classroom. Sketch all the parts and trace the relations between the parts. Make a sketch showing the system used in the Institute. Detailed drawings and specifications will be furnished for the construction of a telephone transmitter and receiver. Make the constructions in the sloyd room and laboratory.

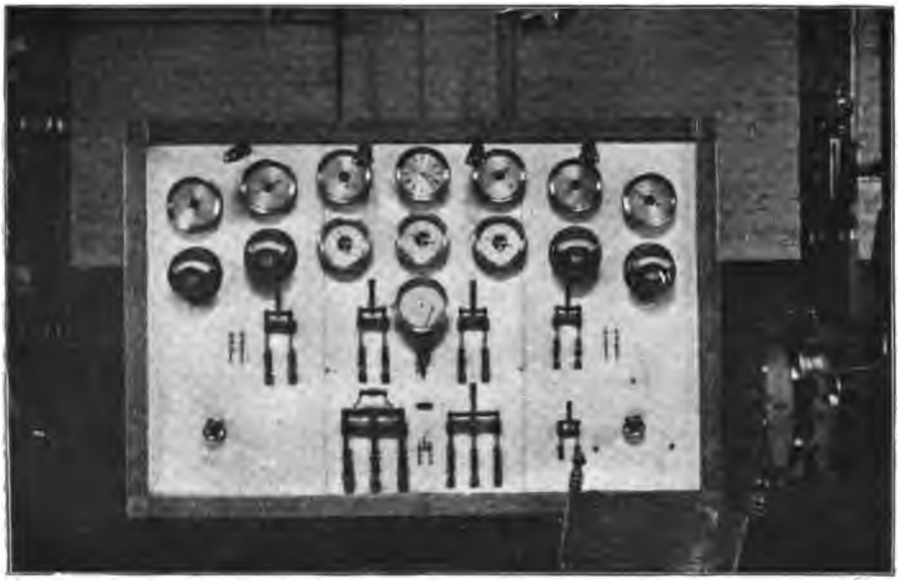
References: SECOND GROUP. Jackman, *Nature Study for Grammar Grades*, Ch. III, pp. 15-36, Ch. IV, pp. 37-44, Ch. X, pp. 91-92, Ch. XVI, 133-135, Ch. XXII, pp. 170-172, Ch. XXIX, pp. 239-246, Ch. XL, pp. 386-397, Ch. XLI, pp. 398-402.

A LOAD OF ARTIFICIAL ICE

II. Plan for work under second group.

1. It is to be understood by students that the observations and records made during the fall and winter quarters upon meteorology and astronomy are to be continued during the present quarter.

2. Compare the periods and intensity of sunshine during the month of April with those observed during the month of March. Note from day to day the variation in time of sunrise and sunset. Measure the declination of the sun at noon on five successive days and compare the variations. Once each week determine the variation (from the east point) of the rising sun. Once each week determine the variation (from the west point) of the setting



POWER-HOUSE SWITCHBOARD

STUDENT'S PAINTING OF LINCOLN PARK IN MARCH

sun. Determine the change in the length of day during the month of April. Determine the factors to be considered in estimating the value of sunshine during the present season of the year.

References: THIRD GROUP. Jackman, *Nature Study for Grammar Grades*, Ch. XXXV, pp. 315-326, Ch. XXXVI, pp. 327-349, Ch. XXXVII, pp. 350-368, Ch. XXXVIII, pp. 369-379, Ch. XXXIX, pp. 380-385; Lange, *Handbook of Nature Study*; Coulter, *Plant Relations*.

III. Plan for work under third group.

1. Visit Lincoln Park, select a portion that gives promise of marked change during the opening season. Note carefully the landscape and its surroundings. Make paintings of the selected portion of the park at least once each week during the spring quarter. Preserve these pictures for reference. Begin the study of the formation of root, stem, and leaf by germinating seeds and bulbs in water-bottles.

2. It is desirable that each student secure a small plot of fertile, unshaded ground—say one square rod—for his exclusive use during April, May, and June. Plant such quantities of the usual vegetable and flower-garden seeds that you may study the development from day to day. Note carefully the meteorological and physical conditions and their effect upon the growth of the plants. Make records of the varying temperature of the atmosphere and soil. (Note: A soil thermometer may be obtained from the laboratory.) Compare the development of a few plants kept in the shade with the growth of those in the open space.

(A further outline of this work will be continued in the May number.)

LINCOLN PARK IN MARCH

LINCOLN PARK IN MARCH

Geography

Zonia Baber

The Geographic Laboratory: The accumulation of weak, inaccurate images in the minds of the pupils has been justly charged as the result of much of our teaching. These weak images quickly fade away, and the child's intellectual potentiality is not enhanced, if it is not impaired. It is not of great import that the subject under consideration should be fixed in the memory, but it is of foremost importance that the habit of clear, logical thinking be formed. It is not difficult for the mind to become accustomed to hazy, indefinite action, satisfied with irrelevant conclusions reached without the logical steps of close reasoning. This is especially true of the subject of geography, because it is often taught as a catalogue of unrelated facts, the causal relations being omitted. When the force which produced certain results is considered with the effect, the process of the action is frequently so poorly understood that it is memorized as a fact rather than understood as a principle which may be applied to all similar conditions.

When looking at the bluff along the lakeshore, we may infer that its general form and position is due to the presence of the lake, but to explain the exact process, one must see the waves at work, watch the recession of the cliff, and note the disposition of degraded material.

We may infer that the falls of the Niagara were once near Lake Ontario, but we cannot during a single observation note any movement in the direction of Lake Erie.

In the laboratory, however, the entire story from the genesis to the extinction of a fall may be traced in a short time.

The school laboratory cannot in any sense take the place of field-work; for one has no problem to solve until he discovers in nature's great laboratory wonderful forms over which is written the question, How made?

In the school laboratory the pupil may be able to solve the problems by imitating on a diminutive scale the conditions found in nature.

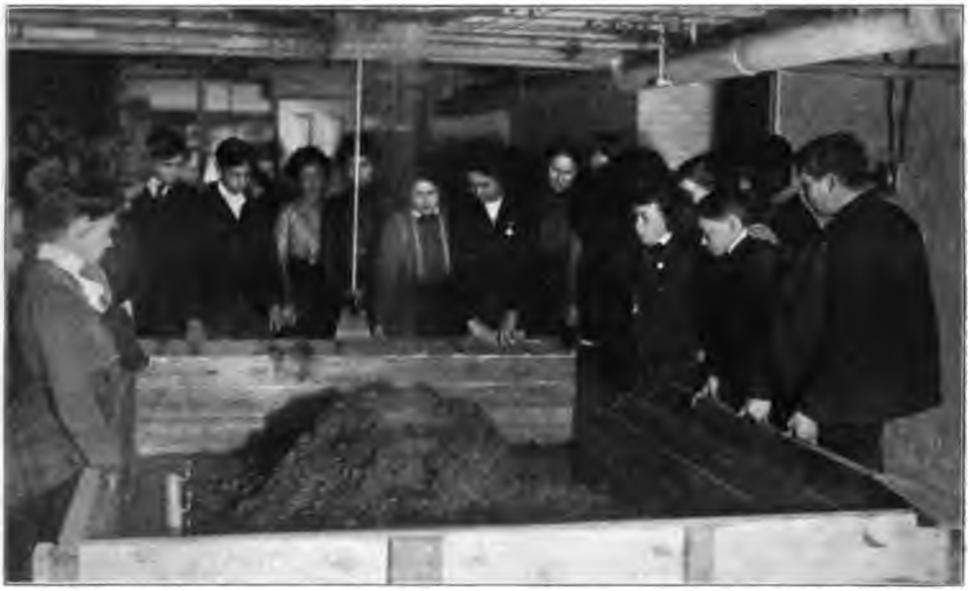
For the study of physiography, in the elementary and secondary schools, a laboratory is indispensable.

For the months when the ground is not frozen, a very simple arrangement in the school-yard will answer the purpose.

A hole a yard or two in diameter and a foot and a half or two feet deep may serve as a lake-basin. By attaching a hose to a hydrant, water may be run over the ground in the direction of the basin, which will result in the formation of a valley, with all the incidents accompanying that interesting creation, as the wearing of the bed downward from side to side, and at the head of the stream; the formation and destruction of falls; the deposition of eroded material in the lake, as a delta, or filling in the bed of the stream. By producing waves in the little pond, all kinds of shore features may be developed. By filling up the basin, the lower parts of the valley, or valleys, will be drowned, making gulfs or bays.

When the water soaks into the ground, the effect is such as is produced when the land rises.

The effect of rain may be produced by suspending the nozzle of a fire-hose, covered with wire netting, a few feet in the air, so that the water is forced upward, and



THE GEOGRAPHIC LABORATORY

then falls as rain. If the rain is made to fall upon a slope of considerable gradient, the effect of the run-off will be noted more quickly.

The above is a description of a very crude temporary affair we used last autumn. The necessity for a laboratory during the cold weather resulted in the making of a box in the basement. (See accompanying cut.)

The box was 7 feet x 11 feet x 2 feet, made of 2-inch lumber. An outlet pipe reaching to within two inches of the top of the box was fitted with a series of faucets, which made it possible to regulate the depth of water in the box. A shower spray was suspended to the ceiling above the central portion of the box, and a wire gauze placed about three inches below the spray further divided the water. This arrangement made it possible to produce something like rain.

A mass of earth built in the center of the box, of alternating layers of clay, sand, and cinders, became an island or continent upon which the rain and run-off expressed itself in valleys, ridges, plains, etc.

By the control of the water, the island was made to emerge or subside according to the requirement of the problem under consideration. In this way shore and inland forms of various kinds were developed.

The wearing down of the land into parallel valleys, producing intervening ridges or mountains, has been referred to, but mountains produced by folding required other apparatus. Accordingly, one of the Pedagogic pupils made a box with one movable end, and a piece of plate-glass in the side. Alternating horizontal layers of clay and plaster of Paris were put into this box, and weighted with a bag of shot. The movable end was forced inward by a screw, causing folding and crumpling of the layers.

Pedagogic School: EURASIA.

I. Why is Europe the center of interest of civilized people?

Why is Asia of particular commercial and political interest at present?

What regions are most attractive to the people of the Occident?

II. Topography.

1. Size; compare with North America.

2. Location of mountains, plains, and plateaux. Compare the continental arrangement of plains, plateaux, and mountains with that of North America. Is the arrangement of mountains and plains most advantageous for man's occupation? Had the location of mountain ranges been similar to that of North America, would it have been better for civilization? Had the great plateau belt been in the northern part of the continent, and the plains in the southern part, would it have been better for human habitation?

III. Drainage: Locate Arctic, Pacific, Atlantic, Indian, and Inland systems.

What effect have the drainage systems had upon the development of the continent? What river valleys of Eurasia have been "cradles" of early civilization? Why? Which are the most important rivers as highways at present? Which are most important to agricultural interests for irrigation? If the rivers of the Arctic system flowed south instead of north, would their value to man be increased or diminished? Why?

IV. Prevailing winds.
1. Influence of westerlies.
2. Influence of monsoons.
3. Influence of trades.

Expression: 1. Model in sand the continent of Eurasia; different drainage areas.

2. Draw in relief the map of Eurasia. Draw in color typical scenes of Eurasia.

References: Mill, *International Geography;* Stanford's *Compendium of Asia*, and also *Compendium of Europe;* Mill, *Realm of Nature;* Reclus, *Earth and Its Inhabitants*, *Asia*, *Europe*.

Pedagogic Questions: 1. In what grade or grades would you teach Eurasia?

2. How would you present it to a class of children?

3. What part would you select as of most importance to present to the pupils? Why?

4. Should history or geography lead in the selection of subject-matter?

Mathematics

George W. Myers

Pedagogic School

In planning a course of study for prospective teachers of mathematics, the important consideration is not to devise a new and better method of transferring the necessary truths and principles of mathematics from the text-book, or the teacher's mind, to the mind of the learner. Nor is it the devising of ingenious means of exemplifying the nature of numerical processes which should be of most concern to the teacher. This has indeed been so long the guiding principle of so much pedagogical work as to convince us that relief from the number bugbear is not to be found through it. It is this which has dragged the word "pedagogy" into discredit among those who are sincerely attempting improvement in number teaching.

Most of the school subjects have so little to do with each other, or with actual life, that they are very soon forgotten after graduation day. It has grown to be a common thing to hear the man of affairs decry the schools as of no practical worth, and the schoolman's attempt to parry the thrust by lauding the disciplinary and cultural value of studies does little to close the gap which yawns between the problems of the schoolroom and the problems of life. That proficiency in the work of the school is no guaranty of efficiency in practical affairs is strengthened by the current opinion that good teachers are usually very poor business men. How often do we hear, with mortification, from the successful man of affairs the assertion that his study of the real questions of life began after his school days were over. "One year after my graduation day," says a scholarly business man, "I had forgotten substantially all I had learned in school." The head of a great industrial concern recently wrote, "I am thankful I never had a high-school education, for my observation convinces me that it would have been a detriment to me in my practical work." Another says, "The high-school graduate feels that hard work is degrading."

Granting that all these statements are in a measure unwarranted, it cannot but be admitted that they are a symptom of what is coming to be a widely prevailing dissatisfaction with the results of school training. They indicate a feeling among the people, which is not to be eradicated by the elimination of political influence from school management; nor by the concentration of power and responsibility in the hands of the superintendents; nor even by learned attempts to lecture and exhort thinking people into the persuasion that the schools would be good enough if the "people would only keep their hands off" and let the experts solve the school problems. But we need to bear in mind that it is the spirit of the American people to meddle with matters which touch their interests so vitally as do the schools. They will not be dissuaded by educational authorities, born and bred under the system in vogue, from exercising what they deem to be the blood-bought right to criticise and interfere in the management of their own concerns. When they discern a weakness in the school system, and particularly when their own children have suffered from it, they are disposed to seek a remedy, and will even go to absurd extremes to secure it, if schoolmen do not hearken to them. Those who are intrusted with direct responsibility cannot afford to look with pedantic disdain upon the opinions of the enlightened public, by assuming that the fault lies wholly at the door of a short-sighted popular prejudice.

The enormous industrial development of modern times and the rapid strides of recent scientific advance are facts not to be lightly thrown aside by the school officer as irrelevant and debasing, but to be soberly and conscientiously dealt with. These two factors, which have been so powerful in determining the trend of modern life, constitute, directly or indirectly, the major part of the difference between barbarism and modern civilization. This being granted, it would seem that those intrusted with the management of elementary and secondary schools cannot much longer ignore them in the school problem. They are the two great sources whence the real need for mathematical proficiency springs. This indispensable necessity for mathematics has kept the study in school curricula through a season of the sharpest criticism ever directed against any subject; and as science and industry grow in importance in modern society, so must the claims of the mathematical subjects for a place in school work be proportionally strengthened. Training, culture, logic, etc., as ends of study can be secured as well from other subjects as from mathematics. Many other subjects, while reaching these ends, are indeed much richer in information than are the mathematical studies; but they do not meet the requirements of the physical and industrial world.

Furthermore, it is a great mistake to argue, as some have done, that but little mathematical knowledge is really needed for practical affairs. It is quite true that very little mathematical knowledge is really used by many practical men. It is equally true that immensely more is used by others. The extent to which these subjects are of practical value is probably more a question of ability and training than is the case in any of the other school studies. Every mathematical subject, as far advanced as calculus, inclusive, is needed in the study of industrial problems, and there is scarcely a known branch of the science which is not called into requisition by the modern physical sciences. Many of the most significant questions of modern social and industrial life must remain forever apart from the mental experience of him who does not possess the mathematical key. Many other lines of scientific study must be forever closed to such a person.

The extent of one's need for mathematics is synonymous with his ability to see things under a quantitative aspect—with his power to discern the abstract in the concrete. Some persons are much more highly endowed in this respect than others. Something more than pure mathematical knowledge, or than pure physical knowledge, is required to make the need for mathematics felt. Both kinds of knowledge may even be had without insuring to the possessor a feeling of this need. Both are *necessary* but not *sufficient* conditions to the implanting of this need. The mental act involved in the co-ordination of the two knowledges —in the sensing of the abstract in the concrete—in the mental experience involved in consciously submerging from view the qualitative attributes of things and the simultaneous holding in consciousness of the quantitative attributes—these are the *sine qua non* of an appreciative feeling of the need for mathematics. This faculty can and must be trained through its normal exercise. It may and should be exercised from the beginning of the number work. It must not be exercised through the solution of artificial and unintelligible problems, intended to exemplify abstract relations and operations, the nature of which is unknown and unknowable in the terms of the pupil's experience with things.

Whenever a problem really calls for the application of mathematics, the nature of the problem determines the method of its teaching. Artificial devices are then quite unnecessary, if not positively harmful. In so far as they withdraw the energy of the mental machinery from the act of abstraction, they are actually weakening to the student. Compared with the skill which enables one to take the mental step from the numbered thing to the abstract number, and vice versa, facility in the manipulation of operations and processes is a very subsidiary part of mathematical training. Facility in handling operations will outrun skill in numerical abstraction, if we succeed in enriching our mathematical courses in really practical matter, and the necessity for artificial devices to trip the student's attention will vanish. The former will come as a by-product in securing the latter. But this will require a thoroughgoing reorganization of mathematical teaching, and must, of course, be brought about slowly.

I. The class will write out and present plans for teaching number classes of the first four grades, giving especial attention to practical problems. Experiments with beams; laws of the lever; simple surveying exercises, etc., are topics upon which plans may be written.

II. The discussion and criticism of these plans.

III. The exercises given under the heading Pedagogic School, COURSE OF STUDY for January, pp. 429-431, will be begun.

IV. The solution of numerical exercises which arise in nature study, physics, and manual training.

Notes on Physics

Charles W. Carman

Prefatory Note

In this outline a systematic course in physics has not been attempted. The aim has been, rather, to collect and assemble such material as would best serve the teacher who is laboring to introduce into the common schools observational work in physical science. Time, material, and quarters are often limited, yet much can be accomplished in narrow quarters and with extemporized apparatus. If one has a desire to know the truths of nature, enthusiasm and results will follow.

"What is so?" "If so, why?" These two questions embrace the whole inquiry of physical science. Let us make an earnest effort to learn what is so and why it is so. The student is cautioned not to use his memory too promiscuously. Do not memorize what follows in this outline. Please use, rather, as directed, your eyes, ears, nose, and mouth.

Directions to Students

There are many ways of studying physical science. We may begin by committing to memory facts and laws discovered by others, and by observing what is going on around us.

Another method, the one we shall follow, is to search in the laboratory and field for the truths we wish. But do not think that going to the laboratory and the field for a given length of time will bring about the desired end. This can be done only by following closely the directions given you, by using your senses freely, by careful thought, by much oral instruction, and by the assistance of many books.

The following general directions should be read carefully and kept in mind as a part of the special directions that are given you in the following pages:

Recitation Hour. — The recitation hour will be used: (1) to give you instructions regarding your work in the laboratory and in the field; (2) to question you on the work you have done previously; (3) to discuss the general principles of the subject, and (4) to sum up and review the previous work.

The Laboratory. — It is very important that you remember the laboratory is designed for the accommodation and preservation of the apparatus to be used, as well as to serve the purpose of a place in which to use it. The utmost care must be taken in moving and manipulating apparatus.

On entering the laboratory, take your place at the table assigned you. Read the directions given you as a guide in performing the exercise for which the apparatus before you has been arranged.

Diagram the apparatus used, if you are able to condense your records by doing so.

Record your manipulations, observations, and conclusions.

When the work assigned you has been completed, you may spend in the reference room the remainder of the time allotted.

Do not touch apparatus other than that designed for the work of the day. If a piece of apparatus is injured, inform your instructor at once. If you find you are unable to perform an exercise to your satisfaction, do not say to yourself (or to any one else), petulantly, "I can't," or "I do not understand it," but, after giving it careful thought, and making earnest effort, ask your instructor to assist you.

Note-Taking.—Make full notes, on a "scratch-pad," while in the laboratory. Let neatness, accuracy, and judgment be used in revising for your record-book. Let your work, sketches, and records be your own. Nothing will lower you in the estimation of your classmates and instructor more than the practice of petty dishonesty.

The Course in Physics

Leading Principles:

The subject-matter is the study of Nature and the Arts.

It is a study of anything and everything that is "going on" around us. For the lack of a better term, the name "Physics" (nature) has been given to the study of a certain class of natural phenomena.

A certain definite quantity of matter, set aside for the purpose of comparison with other quantities of matter, is a Standard Unit.

(See Carman's *Outline*, pp. 18 and 20, Lewis Institute edition.)

The study of nature embraces the study of physics, geology, astronomy, etc., and has done so from the earliest time; but the part of nature study designated physics, geology, astronomy, etc., has changed from decade to decade. If we study thoroughly the part of nature called geology, we must study physics, and vice versa.

(See Carman's *Outline*, pp. 42–48.)

The subject of physics is largely the subject of measurements. To make measurements of any considerable value, preliminary training is necessary.

Subject-Matter.

The "Physics" Side of Nature Study.

The Barometer.

References: Carman, *Outline of an Elementary Course in Physics*, p. 52; Stewart and Gee, *Elementary Practical Physics*, Exercises 7-11; Chute, *Physical Laboratory Manual*, pp. 14-15; Davis, *Elementary Meteorology*, p. 11; Adams, *Physical Laboratory Manual*, pp. 27 and 59; Edser, *Measurements and Weighing*, pp. 41-45; *Chicago High School Manual*, p. 4.

Exercise 1. - (Math.) Give the Theory of the Vernier.

Exercise 2.—Read the Fortin Barometer, using the Vernier attached to the Scale.

Exercise 3.—(Math.) Construct a Vernier.

See Carman's *Outlines*, p. 58, Exercise 2 (a).

Exercise 4.—Repeat Torricelli's "Classic Experiment." See Chute's *Laboratory Manual*, pp. 60-62; Adams' *Manual*, p. 57; *Chicago High School Manual*, pp. 84-89.

Exercise 5.—(a) Take the aneroid barometer furnished you to the basement of the Institute building and make and record three readings. Read the Fahrenheit thermometer also. Go to the third story of the building and repeat.

Determine the height of the building by using the following formula: Let

P=air pressure at lower place of reading,
p=air pressure at upper place of reading,
t=temperature Fahr.,
h=vertical distance in feet between places of reading; then

$$h = \left\{ 60360 + (t - 32^\circ)\ 122.68 \right\} \log._{10} \frac{P}{p}$$

Note.—Ask your instructor in mathematics to discuss this application of mathematics to physics.

Exercise 5.—(b) (Optional.) Take the aneroid barometer and a thermometer to Lincoln Park and repeat (a) at the base and highest point on the high bridge. Compute the height.

Exercise 5.—(c) (Optional.) Determine the height of a neighboring water-tower by means of similar readings.

Exercise 5.—(d) (Optional.) A trip on the Ferris Wheel. With the apparatus used above, make readings on entering the car. Make readings at intervals of thirty seconds during the trip. Plot a curve from readings obtained.

See Carman's *Outline*, pp. 68-76.

Ask your instructor in mathematics to aid you if you need assistance.

Compute the height of the wheel from your maximum and minimum readings.

Ask your instructor in mathematics to give you other methods of computing the heights of the building, bridge, water-tower, and wheel.

Exercise 6.—Read and record the barometer and thermometer three times each day for a period of three weeks. Make the readings as early as convenient in the morning, at noon, and as late as convenient in the afternoon or evening.

Plot a curve from the readings obtained.

Record, also, the amount and kind of clouds, and the direction of the wind.

Special—Section I—References.

Carman's *Outline*, 1889 Ed.—Page 28, Exercises 1 and 2. Page 29, Exercises 5, 7, 8, 9, and 10. Page 30, Exercises 11 and 13. Page 31, Exercises 14 and 20. Page 32, Exercises 24 and 25. Page 33, Exercises 37 and 39.

Note.—The exercises given above are to be performed in the laboratory and recorded in your record-book.

Special—Section II—References.

Carman's *Outline*, Lewis Institute Ed. —Page 18, Standard Units. Page 20, Table of Relative Values. Page 22, Mathematical Formulas. Page 24, Alphabetical Tables of Definitions. Page 26, The C. G. S. System of Units. Page 40, The Greek Alphabet. Page 42, Lecture Notes. Page 48, Laboratory.

Demonstrate "The General Theory of the Diagonal Scale." Page 50, Exercise 1 (a) and (c). Page 52, Demonstrate "The General Theory of the Vernier." Page 58, Exercise 2 (a), (b), (c), and (d).

Nature Study—Section III—References.

Carman's *Outline*, 1889 Ed.—Pages 86 and 87.

Carman's *Outline*, Lewis Institute Ed. —Page 124, Lecture Notes. Page 126, Laboratory: Exercise 15 (a) and (b). Page 126, Questions.

(See Chicago Institute COURSE OF STUDY, Vol. I, No. 2, October, page 130.)

Sections I, II, III

Tuesdays—12:15 to 1:00.

References: Carman's *Outlines*, 1889 Ed., pp. 86–87; same, 1897 Ed., p. 126; Waldo, *Elementary Meteorology;* Davis, *Elementary Meteorology;* Buchan, *Introduction to Meteorology;* Scott, *Elementary Meteorology;* Russell, *Meteorology;* Greely, *American Weather;* Appleton's Cyclopedia, Vol. XI, p. 432; same, 1875, p. 797; same, 1896, p. 470; same, 1898, p. 489; daily weather map.

The study of a daily weather map.

The study of the official weather forecast as published in the daily papers.

The location of, and the method of reading, the meteorological instruments of the Chicago Institute.

A visit to the local station of the United States Weather Bureau, Auditorium Tower. Read the barometer at the base of the tower and at the highest point that you are able to reach. Compute the height of the tower. (See *The Aneroid Barometer; Its Construction and Use*, Van Nashand's Science Series, pp. 88, 107 and 121.)

The preparation of five weather maps.

Subjects for experimental recitations:

1. Historical Sketch of the Growth of the Science.
2. The Mercurial Barometer.
3. Barographs.
4. Aneroid Barometers.

5. Thermometers and Thermographs.

6. Hygrometers, Psychrometers, and Rain Gauges.

7. Kites and Meteorological Observations.

8. Dew, Fog, Mist, Cloud, Rain, Snow, and Hail.

9. Electrical Phenomena.

10. Optical Phenomena.

11. How Weather Maps are Made.

Kindergarten Pedagogy

Bertha Payne

During the spring quarter we will take up the adaptation of subject-matter to the children of the two grades found in the kindergarten. This will include a consideration of the corresponding growth in expression seen in the children of three, four, and five years, respectively.

The question is frequently asked, When is a child ready to enter the first year of school? or, When has he gained all the kindergarten has to offer? These questions are often answered by saying that the kindergarten affords opportunities to learn and to gain power through play. When the children are ready to work, the school is the proper place. This is rather a misleading distinction, for work goes on in the kindergarten, and play in the school, and rightly so.

If we analyze the question more closely, we find the children developing new needs and new interests that may be classified as follows:

1. The need is felt for preserving a record of his doings, his ideas, his experiences, in symbols; writing follows.

2. Playing at participation in the work of others becomes less satisfying than formerly. The child feels need of an effective part in his little society.

3. In order to reach some goal, the child becomes capable of planning a process in which the end is not immediately achieved, but requires time and forethought.

4. The casual interest begins to show itself strongly. The attention long called out by motion and life is turned more definitely to search for causes in the physical world. The genuine experiment in nature study has its place here.

All these changes mark the need of the reading and writing, the more continuous work, and the scientific treatment of common experiences which the school supplies.

Before this time comes, however, when a child is still in the kindergarten, he shows different stages quite as marked in their characteristics.

In infancy, as in childhood and in all periods, all have in common a want; the want leads to action.

I. Desire is at first merely for movement.

II. This movement so set up brings consciousness of power: desire to move in certain particular and controlled ways, cooing, lifting head, turning to light, etc.

III. Desire to reproduce certain sensational results, first accidentally experienced: grasping, reaching, throwing, rattling, pounding.

IV. Following the first ideo-motor imitations comes desire to reproduce the actions of others, to use objects as others use them. Repetition follows success. Love of feeling power is thus satisfied.

V. True play-desires appear. New uses are invented for objects, the meaning of one thing is applied to something else. The hat is a cradle, the cookie a wheel, the stick is a horse, and the corn-cob a doll. When this play no longer suffices with but one companion, the kindergarten affords the little society and the tools for more extended plays.

Motive: Expansion of self to take in the meaning and animus of people and things.

VI. Play impulses merge into something more like work. The accident of resemblance between the child's playthings and real things no longer serves as a basis for his play.

1. Desire to construct appears—to make a conformity to his idea appear in the objective world. The vague heaping and piling of blocks seen in the nursery is supplanted by plan and choice of material for its fitness to the purpose in view.

Motive: To realize the idea by molding and shaping crude material.

2. Imitations, and direct copy of the doings of others develops into more original dramatization with invented situations.

Children who exhibit these characteristics are still in the play stage, and still need concrete representative forms of expression.

In adapting the possible subject-matter of the kindergarten to the youngest children, we find certain characteristics of the three and four year olds that serve as guides to choice under the following heads:

I. Stories:

1. Love of repetition. (a) Preference for the jingle of rhythm in *Mother Goose;* (b) preference for repetition of names and actions, as in the nursery tales of *House that Jack Built, Henny Penny, The Old Woman and the Pig.*

2. Simplicity in plot.

3. Distinct incident; as in *Jack and the Bean Stalk.*

II. Games:

1. Love of repetition, as in *Looby Loo,* marching and skipping games, finger games, ball games.

2. Surprise, as in hide-and-seek.

3. Use of power without special competitive effort; as in climbing, running, etc.

III. Experiences:

Interest in watching work. Great interest in people, seeing what they do and how, rather than why. Interest in all things showing force and power through motion and sound. The fire-engine, the locomotive, the driver, even the peddler with his cries, all invite imitative play. In nature, animal rather than plant life yields an absorbing interest.

IV. Pictures of people and children, of work and action, and of animals. Flowers and landscapes take a very subordinate place.

Too much cannot be said of the worth of pictures in giving a center for attention. Past experience is brought up and focused by means of pictures.

V. Forms of expression:

1. Building: (a) Large blocks preferred in cubes and bricks. (b) Co-operation is seldom spontaneous at first, but grows as need arises. (c) Objects made are familiar things, endeared by personal use and association, as beds, tables, and other furniture; or by function that is attractive, as trains, wagons, etc. (d) Mode: Aimless piling often precedes this, and the first object made is usually a happy accident, which illustrates the especial value of blocks as play material. They afford incentive to expression.

2. Modeling: (a) Much vague rolling, pounding, and patting, until the possibilities of the clay are revealed in a chance resemblance. (b) Repetition of the same forms over and over again, until an unusually strong stimulus and strong image lead to truer expression.

3. Painting: (a) Shows same results as in modeling. (b) The brush tells a story before it copies an object. The copying of flowers and fruits is useless when the interest is in events. (c) The first copy or record should not be of a small object, but of a large effect, such as a sky, a field, a row of houses, because the child loves a flood of color, and must satisfy that want first, and because he sees in large, not in detail.

4. Making: (a) Building takes its place at first. (b) When permanence is needed, paper folding and cutting or tearing are useful, because the material is easily managed by weak hands. (c) The wood-work is suitable only for the older children of the kindergarten. (d) The sewing of the kindergarten is not adapted to the youngest for many reasons. It tries the eyes and the nerves.

5. Chief of all materials for the youngest is sand, in boxes, pans, or on rimmed tables. (a) Expression by means of hand, and with use of the whole upper part of the body, is encouraged. (b) Serves as material for modeling. (c) Whenever a review of a walk or a trip is needed, this is one of the best ways for expressing the route taken and things seen, because they can be completely realized; as, for example, the representation of the farm or farmyard; slats may be used for fences, block houses built, and trees set up, gardens laid out, the lakeshore represented. It may epitomize most experiences, and is a good field for the illustration of stories.

Manual Training

Ira M. Carley Cora Champlin

Members of the Grammar grades will construct a hotbed for use in the school garden.

The dimensions will probably be as follows: Length 16 feet, width 3½ feet, height of higher side 14 inches, height of lower side 6 inches. The frame of the bed will be strengthened by pieces 2 inches by 2 inches fastened into the corners and extending about 8 inches below the frame, so as to be driven into the ground. Additional stiffness will be given by cleats about 3 inches wide fastened across the boards, and by a strip of the same width fastened along the entire upper edge of the box.

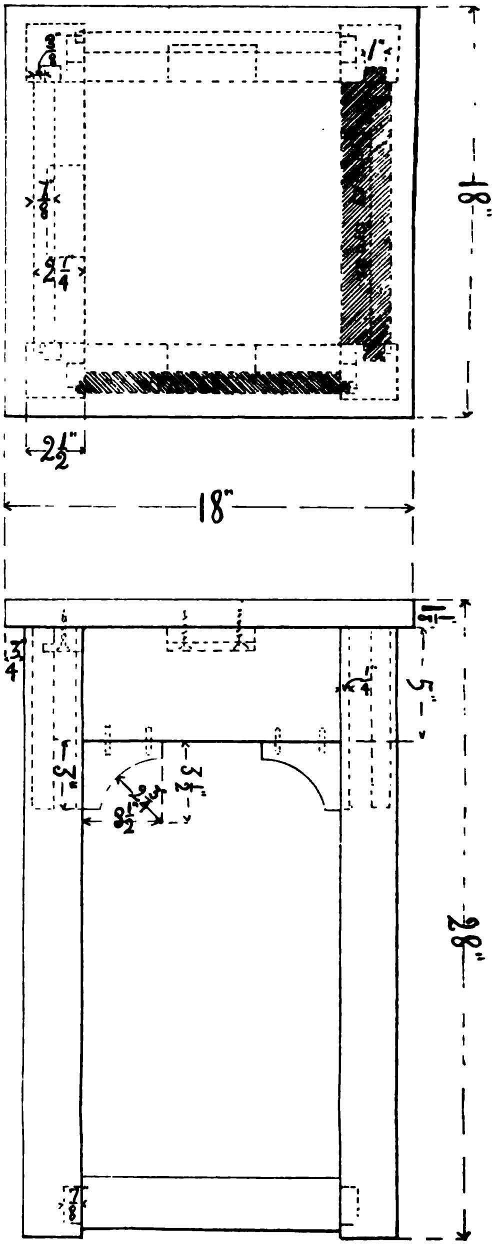
The most difficult part of the work will be the making of the sashes to hold the glass cover of the bed. Of these there will be four, dividing the bed lengthwise into four sections, and each one will be the work of three pupils.

The outside frame of each sash will be made of 1⅛-inch pine, the strips being 2½ inches wide. The corners of the frame will be joined by open mortise and tenon joints, fastened with ⅜-inch dowels.

Each sash will be divided for four panes of glass by strips 1½ inches by 1⅛ inches running across the bed. The ends of these strips will be mortised into the frame of the sash.

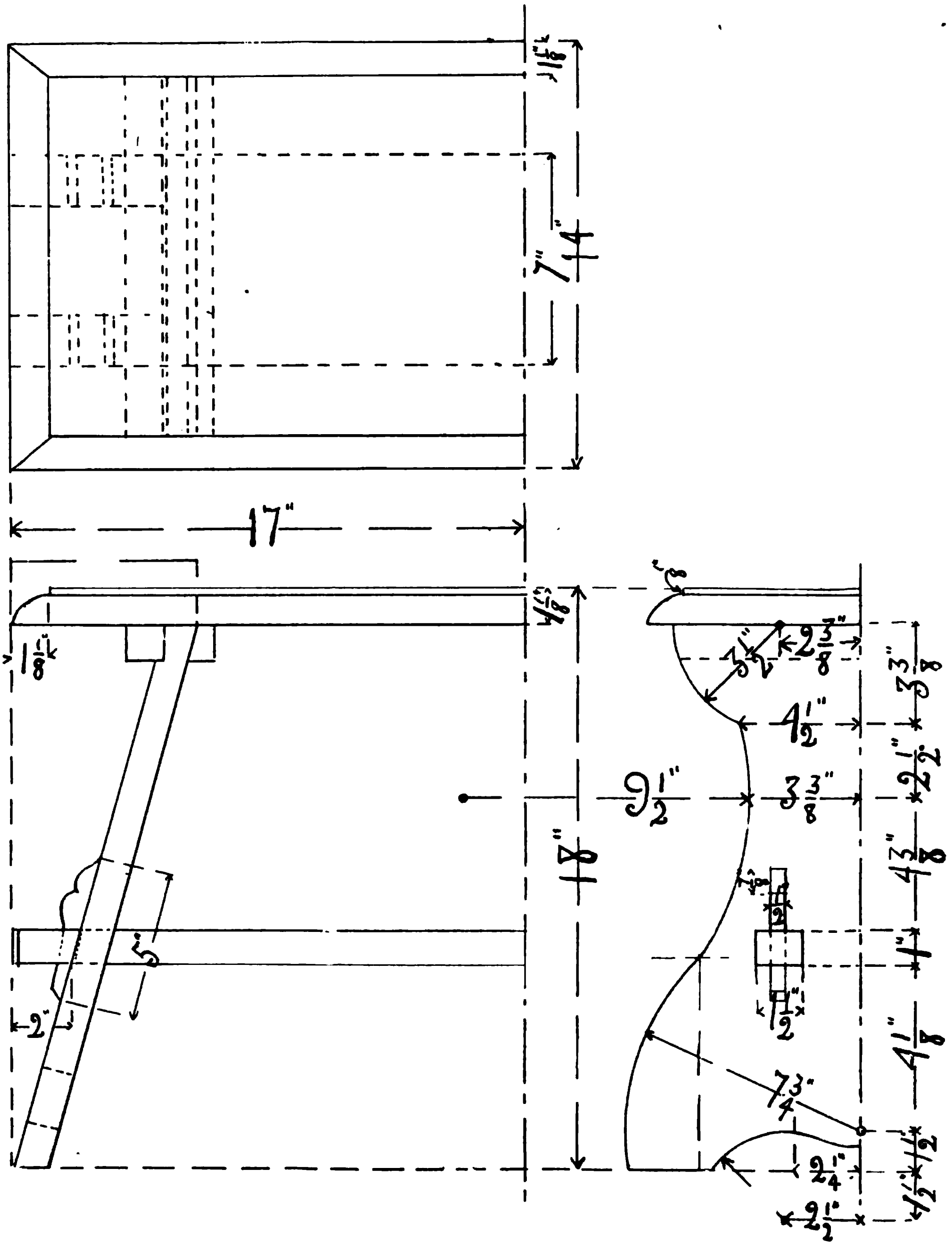
Before the sash are put together, each piece will be rabbeted to receive the glass, which will be fastened in place by light quarter-round strips.

The children of the Fifth and Sixth grades will draw the general plan of the bed to a scale, and will calculate the amount and cost of the lumber, hardware, and glass to be used.



TABLE

Oak. Panels and brackets carved. Finished gray-green or dark brown. Top fastened to legs with four blocks working in grooves in panels.



PIANO BENCH

Oak, stained black or "weathered." "Rope" border carved around edge.

The cost of the different grades of pine lumber will have to be ascertained by them, as a rather poor quality will be used for the sides of the bed, while a good quality is necessary for the sash.

The Seventh and Eighth grades will make detail drawings of one of the sash, drawing the mortise and tenon joints in isometric projection.

The members of the Pedagogical School will make light, portable easels and folding stools to be used for outdoor sketching. The easel consists of three round sticks of pine or spruce, ¾ inch in diameter and 4½ feet to 5 feet high, with a light ferrule at each end. The three sticks are joined together at one end by screw-eyes, large enough and so placed as to allow the sticks to be spread apart or closed together. At the lower end a short spike is made by driving in a 2½-inch wire brad to within about ½ inch of its head, and then filing off the head.

The drawing-board or canvas frame may be held either by resting it on hooks screwed into the sticks of the easel, or by suspending it by hooks to screw-eyes.

The folding stool will be simply a light three-legged stool of convenient height with a triangular canvas top.

The drawings given in this number of the COURSE OF STUDY are of pieces being made by pupils of the Pedagogical School and High School. The designs are partly the work of the students and partly suggestions of the art and manual training departments.

As a rule, work of this kind is done optionally, outside the regular class periods, as that time is usually taken up with work more directly connected with the school-work.

Physical Training

Carl J. Kroh   Caroline Crawford

General Work

Outline for School Study: For the general teacher the preventive side of physical training is of the greatest importance. The present situation regarding the teaching of body development is such that what might be accomplished directly in physical development is overcome by the failure in the schoolroom to present an environment which prevents physical debility. The teacher should be intelligent regarding both the child and his environment. The two are equally important, if the child is confined to the school several hours each day. The following outline is given as a guide for the teacher's study. It is not to be considered complete:

I. The child.
1. Nutrition.
(a) Air, quantity and quality.
(b) Water, quantity and quality.
(c). Food, quantity and quality.

The description for the study of nutrition is included in the March outline and in the second part of the present outline.

2. Normal body for age.
(a) Study of measurements.
(b) Laws of growth and development.
(c) Physiology of bodily exercise.
3. Physical defects.

The photographs show defects which are both the result of the environment and also of the failure on the part of the teacher to understand the effect of gravity on the body in standing and sitting.

4. Senses.
(a) Eyes.
(b) Ears.

Diagnosis of abnormal organs is not required, but the abnormal sense should be recognized, and means taken to have the best possible condition produced. As the throat plays so important a part in reading and singing, the same treatment applies to it as to the eyes and ears.

5. Application of the laws of growth and development.
  (a) Work.
  (b) Fatigue.
  (c) Rest.
  (d) Recuperation.
6. Standing.
  (a) Analysis of position.
  (b) Muscles used in standing.
  (c) Effect of gravity on body when standing.
7. Position of body for motor-work.
  (a) Reading.
  (b) Writing.
  (c) Singing.

II. The environment—school hygiene.
1. Location of building--soil.
2. Seating.
3. Heating and ventilation.
4. Lighting.
5. School diseases: (a) contagious; (b) chronic; (c) nervous.

Outline for Home Study: NUTRITION. The object of this study, fragmentary as it must be, is to obtain some data that will assist both the teacher and the mother in guiding the growth and development of the child. It is hoped in time to extend the study to numbers sufficient to overcome the source of error.

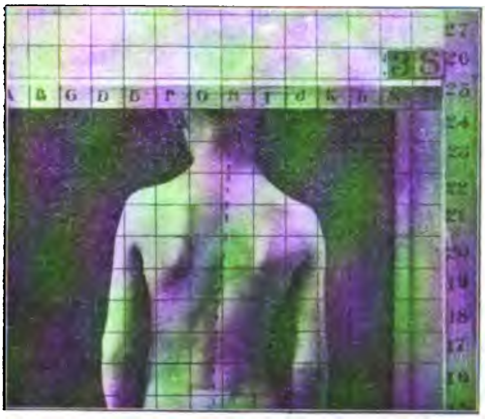


FIG. 1.
Showing common defects of low shoulder and incipient spinal curvature.

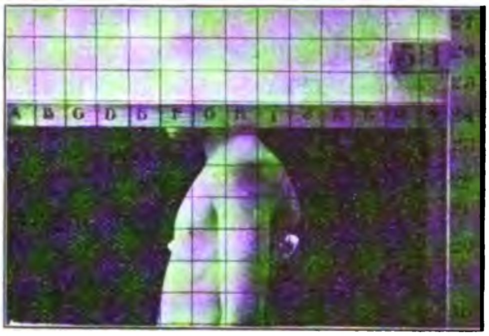


FIG. 2.
Showing resulting defects of careless standing.

Diet Tables:* The tables are given for future reference in comparing diet lists with calculated averages:

AGE.	PROTEID.	FAT.	CARBOHYDRO.*
	grams. oz.	grams. oz.	grams. oz.
5 yrs.	56 = 2	43 = 1.5	145 = 5.1
8–9	57.44 = 2.05	45 = 1.6	150 = 5.3
12–13	67.56 = 2.4	48 = 1.7	245 = 8.7
14–15	79 = 28	48 = 1.7	270 = 9.6

Diet List: (If food is taken more than four times daily, note time and quantity in space marked extra. Keep record for five consecutive days.)

DATE. ....

TIME.	TIME.	TIME.	TIME.	TIME.

Illustration of method of recording:

DATE, 1901-3-1.

A. M.				
Time..........8:00				
Oatmeal, 1 tbl.......				
Cream and sugar....				
Beefsteak, 1 serving.				
Bread, 2 slices.....				
Butter, 1 ball.......				
Milk, 1 cup.........				

Physical Measurements: The measurements taken in March will give the winter's growth; also the result of the work that has been done during the winter quarter.

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*From Uffelman's Domestic Hygiene of the Child.

References: The references given in the February and March numbers are referred to for the first part of the outline. In addition the following list is given:

Briggs, *Heating and Ventilation; Sanitary Arrangements, etc.* (see his *Modern American School Buildings*, pp. 155-218) 1899; Burgerstein and Netolitzky, *Handbuch der Schul-Hygiene*, 1895; Burnham, *School Hygiene* (see *Pedagogical Seminary*, 1892, v. 2, p. 67; Bibliography, pp. 68-71); Cohn, *Hygiene of the Eye in Schools*, 1886; Farquharson, *School Hygiene and Diseases Incidental to School Life*, 1895; Fitz, *Bed-Posture as an Etiological Factor in Spinal Curvature*, 1898, and *Hygiene of Instruction in Elementary Schools* (Report for Amer. Physical Education, rev. v. 3, No. 4) 1898; Gardner, *Town and Country School Buildings*, 1888; Massachusetts Board of Health, *Home Hygiene* (see Tenth Annual Report, 1879, pp. 87-109, Nineteenth Annual Report, 1887, Thirtieth Annual Report, 1898); Newsholme, *School Hygiene*, 1894: *Communicable Diseases in Schools*, pp. 116-130, *General Principles of Ventilation*, pp. 21-45, *School Furniture*, pp. 12-16, *Site of School and Construction of School Buildings*, pp. 3-11; Parkes, *Practical Hygiene*, 1883, v. 1; Scudder, *Special Report on Seating of Pupils in the Public Schools* (School Doc. No. 9), 1892; Uffelman, *Domestic Hygiene of the Child*, pp. 128-152; Woodbridge, *School-house Warming and Ventilation* (see Connecticut Education, Board of, Report, 1898, pp. 337-364).

Organization of a Library

Irene Warren Frances Simpson

Classification

The two systems of classification which have been most carefully worked out are the Cutter Expansive System and the Dewey Decimal Classification. Any plan of classification must of necessity be arbitrary. The Decimal Classification is outlined below because it is the one used in the Chicago Institute library. Some changes have been made to meet the requirements of this library. There are certain points in the printed scheme which are open to criticism. This is somewhat due to the rapid development of certain subjects. The strong pleas made for it, however, are that it is relative and expansive.

All knowledge, according to this classification, is divided into ten general subjects, as follows:

000. General Works.
100. Philosophy.
200. Religion.
300. Sociology.
400. Philology.
500. Natural Science.
600. Useful Arts.
700. Fine Arts.
800. Literature.
900. History.

Each of these is again divided into ten subdivisions. For example, the following is the second subdivision of the Natural Science:

500. Natural Science.
510. Mathematics.
520. Astronomy.
530. Physics.
540. Chemistry.
550. Geology.
560. Paleontology.
570. Biology.
580. Botany.
590. Zoölogy.

In turn the third division divides each of these hundred divisions into ten subjects, making one thousand divisions. The following shows the divisions of one subject, 510, Mathematics:

510. Mathematics.
511. Arithmetic.
512. Algebra.

513. Geometry. Conic sections.
514. Trigonometry.
515. Descriptive geometry.
516. Analytic geometry. Quaternions.
517. Calculus.
518.
519. Probabilities.

Thus, carrying out the decimals, many of these subjects have been very minutely classified.

The following shows how this is done:

900. History.
970. History of North America.
973. History of the United States.
973.1. History of the United States. Period of discovery.
973.11. Pre-Columbian Claims.

The Abridged Decimal Classification with its full Relative Index will doubtless be found quite sufficient for the average school library.

The prices of the above-mentioned classifications are as follows: Decimal Classification and Relative Index, $5.00; Abridged Decimal Classification and Relative Index, $1.50; Cutter's Expansive Classification, complete, $5.00.

Home Economics

Alice P. Norton

During the last quarter some experiments have been tried whose results should be recorded. Since one of the weak points in the teaching of cooking is the isolation of the subject, the attempt has been made to correlate the work as closely as possible with other studies. To have its full value, this work should add to the clearness of the images gained by the child in some of his studies, and should furnish subject-matter for others.

In the Fifth Grade the subject of the nature study planned for the winter was food. It was decided to make this a study of food plants rather than of the chemical constituents of the foods, and the cereals were chosen for the work. Stalks of the different grains, corn, wheat, oats, barley, and rye, were obtained and given to the children for examination. Pictures illustrated the appearance of various grains growing in the fields, while the painting of corn and of wheat gave an opportunity for the expression of the differences in mode of growth. The structure of the wheat grain was then studied, first under a hand lens, and then with the microscope. Starch had already been discovered in the cereals, because of its thickening power, and by means of the iodine test, and the starch grains were now seen. The visit to the flour-mill which the class made showed more clearly the different coatings of the grain and their uses.

The possibility of preparing sugar from starch was illustrated by allowing each child to chew a piece of cracker for a few moments. Though the change had not been suggested, the children all discovered that the cracker grew sweet. This introduced the study of sugar, its chief commercial sources in the sugar-cane and the beet root, its mode of preparation for market, and a comparison of different kinds and grades of sugar.

During this time, at a period directly following the nature study, the children had cooked the products of the food plants studied (as outlined in the February COURSE OF STUDY). Eight lessons were given on these topics, three of them on corn, including the popping of corn, the cooking of corn-meal and hominy, and the making of a cornstarch mold; two chiefly on wheat, including the preparation of breakfast cereals and the making of cereal coffee; one on potatoes and potato soup introduced another kind of starchy food, and showed the use of flour for thickening; and one on sugar, in the form of candy.

The nature work and the cookery have furnished many problems in arithmetic for the children to work out in their number lessons, and one writing period a week, that following the cooking, has been devoted to writing an account of the work done, including the recipes used.

The plan has on the whole worked well. Much of the work done in the nature study might have been accomplished as a part of the cooking lesson, but on some accounts it has been more satisfactory in this way. When the children come to the cooking class they expect active work, and it is often difficult to check their impatience to begin, long enough for them to gain an intelligent idea of what they are to do. While interest is by no means lacking in the problems that arise, there is always manifest a little disappointment if discussion or experiment take too much time. The plan carried out has made it possible to take all the time needed for study of the food plants, and for experiment, without this disadvantage. Constant use has been made in the cooking of work done in the nature study, and the children have been asked to apply directly the knowledge gained. The solution of some questions arising in the cooking class, as for example, "Why does corn pop?" has been worked out in the nature study.

One weak point of the work from the cookery standpoint has been too many lessons in succession on starch. Albumen was not introduced until after the eight lessons indicated were completed. More variety and perhaps greater benefit would have been gained if this had been introduced earlier.

That the interest of the cooking lies chiefly in its activity, and its close relation to the experience of the child, and not in simply preparing something good to eat, has been shown by the fact that one of the best lessons of the quarter was the one on cereal coffee, where the children roasted and ground wheat grains and used these for preparing a drink, in order to compare this with the beverage made from the cereal coffees on the market. Whenever anything transportable has been made, nearly every child has asked permission to carry the article home. That the work does react on the home is shown by the fact that a large part of the children repeat at home the work done at school, though no point has been made of having this done.

In the Sixth Grade a similar correlation with nature work has been successfully carried out, but two other attempts have not been so satisfactory. The connection between the cooking and the geography work, as outlined in January, has not been maintained, for the ground has been covered far more quickly in the cooking than in the geography. Perhaps a more careful planning of this work might make it more successful. The experiment in teaching French with the cooking was also a partial failure, for the children felt that it hampered them in their work. A little more previous training in French would have obviated some of the difficulties. The speaking of French during the serving of the food was more satisfactory. The experiment will be tried again, if possible, under more favorable circumstances.

The giving of the work in cookery to boys as well as girls, though by no means new, is not as yet general. It has been done as a matter of course, with no suggestion that any difference should be made; and the boys in every case have shown as much interest as the girls, and have apparently received as much benefit. They have been as anxious to take their work home, and to cook at home. If the object of the work is not an industrial one, but is the training of the child, the preparing for citizenship, and the inculcation of sympathy with the home and its life, it is as valuable for the boy as for the girl.

Cooking in the Primary Grades

Flora J. Cooke

During this month each grade of primary children will devote the cooking time to the study or consideration of certain seeds and plants which it will be practicable to plant in the school garden. As the school closes in June, only such vegetables or berries can be selected as will mature in two months, i. e., radishes, lettuce, onion sets, etc.

To find what to choose, the children will need to read and experiment. They will also be allowed to select flowers to plant that can be used in school decoration.

Each child will be responsible for one vegetable or berry and one flowering plant. He will discover what is necessary for the best growth and rapid development of his chosen plants, and how he can best serve or use the fruit or flowers at the luncheon period. During the cooking periods, therefore, it will be necessary to use the lunch-room, library, and garden plot as laboratories for individual experiment. The children will help as much as possible in the preparation and care of the hotbed and its contents.

In some lessons each child will work independently, and at other times the entire class will help an individual with his problem. The records of all the experiments will be kept in the cook-books as data on food. The correlated work in reading, writing, and mathematics cannot yet be given in detail, but their necessity is suggested by the method of work outlined above. While there is no actual cooking planned for this month, the motive of the work in cooking in the primary grades, as outlined in October, is not changed. In considering the foods best to serve from the standpoint of the season, and in trying to discover how best to prepare them, it will be necessary for the children to employ different physical activities, gardening being substituted for cooking.

Literature in the Primary Grades

Flora J. Cooke

The time has passed when teachers need to be urged to give literature the place which its value merits in the primary school. However, the *basis for the selection of stories and their adaptation to the needs of a particular class of children* will always be interesting topics for consideration. The results of several years' experiments are here given.

The Selection of Stories

If the fundamental activities and interests of children determine the choice of stories, a detailed list of those used during an entire year, with any adequate explanation as to the motive and adaptation, would be too varied and comprehensive for the limits of one article. It is possible, however, to group the kinds of stories chosen from this standpoint under four general heads:

I. Stories which embody ideals of courage, generosity, strength, wisdom, unselfishness, kindness to animals, etc.

Children instinctively imitate what they admire. For instance, we have all noticed the influence of a father, a policeman, or even a teacher, as we have watched the child graphically reproducing their chief characteristics in his play and unconscious actions.

It is because the responsibility of the ideals of the children depends so largely upon the parents and teachers that we make the strong plea for the careful selection of stories. Their influence is only second in importance to that of personal example, and the child's needs, experiences, and tendencies should determine their choice. Stories bring the children into contact with the world's standards of what is brave, wise, and kind. But the final test of the story is its power to arouse in them appropriate emotions, which unconsciously but immediately find expression in their daily actions.

This is illustrated by such a story as *The Wise King and the Bees.*

In this story King Solomon is presented by the Queen of Sheba with two bouquets, one of real and one of wax flowers. Being unable to decide which were the natural flowers, the King said, "Open the window for my friends the bees; they shall decide this question for me." In this way the children are introduced to the so-called "*wisest* man," and wisdom appears in a form which, from actual experience, the youngest child in school may understand and appreciate. Again, it is most interesting to trace the growth of ideals in children in a series of stories illustrating different types of courage. Among many stories used in this connection were the following:

William at the Natural Bridge in Virginia, found in *Monteith's Science Reader*—a type of pure physical courage; *Casabianca,* a poem—a type showing unreasoning physical and moral courage; *Peter at the Dyke,* a poem by Phœbe Cary—a type showing reasoning physical and moral courage; *Prometheus,* classical myth—highest type of physical and moral courage.

The children were allowed to compare these heroes, choosing the one they considered bravest for dramatization, or the one they preferred to represent, always giving the reason for their choice. Although the heroes named above probably never existed, they illustrate in simplicity the desired types. The characters chosen for representation were also quite frequently chosen from real life and history.

II. Stories of industry and invention.

These stories are usually told when some condition makes the children feel the necessity for a certain invention or a particular kind of work. They are first given the opportunity to experiment, trying to solve the problem for themselves. For instance: In connection with their work on food, the children needed vessels for holding water, dry materials, and for cooking purposes. They examined the dishes at home and suggested ways of making some for use in the schoolroom.

As their efforts were not entirely satisfactory, they were prepared to appreciate the crude products of primitive peoples, as they had experimented in the same direction. The children noted with great interest the simple forms, unglazed surface, and crudity in decoration in this work. At this stage a potter came to the school and illustrated how modern dishes are made and shaped with ease and accuracy.

The children examined many modern specimens of pottery, and the influence of the work was marked in their taste, in their observation as to differences and improvements, and in their general interest in the dishes, in the home, and in the stores visited. Later in the year they made a set of clay dishes, which they decorated and burned in a rude kiln. Among the stories told in this connection were *Grandmother Kaolin*, *Clay Dishes*, Sara Wiltse's *Kindergarten Stories*, *Story of Palissy the Potter*, and *Story of the Porcelain Stove*, Kate Douglas Wiggin, and the story of how books were once made of clay.

In the same way the methods of the heating and lighting of houses, the purification of water for drinking, the manufacture of cloth, the ways of telling time, and the making of tools for the garden were worked out by the children in the primary grades.

III. Home and social activities of the children.

Some part of this work comes into each month's plan, and constitutes the beginning work in history.

In November the children have the story of the first Thanksgiving Day and how it came to be. In December they are given in some dramatic form the stories of the children of different nations, who, while they speak different languages, dress differently, and have perhaps a different climate, yet in so many lands celebrate this same day as happily as we do.

On account of space we cannot go into the details of this work, but shall suggest in general one of its phases, that of the *home*.

The children give their own ideas of the use of the home as a protection against cold, storms, enemies, etc. They are asked to construct a model of a shelter that would protect them in a certain given season of the year.

They examine their own homes, and begin for the first time to appreciate the skill and division of labor necessary to produce the common comforts which they enjoy. Their own efforts usually result in a cave, a wigwam, or a round snow-house, according to the season and environment, and they are given the story of the people who lived and worked under similar conditions, as the Cave Men, Indians, or Eskimos. Thus, during the year, the children begin to discover how environment influences the work and habits of a people, and how environment may be overcome. The real motive of this line of work is to cultivate unconsciously and gradually in the children a wholesome sympathy and a comprehension of the rights and difficulties of other people, which shall not only make the history work valuable to them as *knowledge*, but be more truly educative as an influence guiding daily action.

IV. Selected nature myths, fables, fairy stories, poems, and songs.

Through such stories the children are directed in their own world—a world of personification, fancy, and rhythm. We can only refer to these stories under the heading of:

Adaptation of Stories: The poets have, in many cases, adapted stories and given us ideas, nature observations, and truth in such simple and beautiful forms that our crude touch only mars them, and whenever it is possible to use it, the rhythm of the original always adds to the pleasure and value of the story. For example, in Longfellow's *The Birds of Killingworth* and *The Emperor's Bird's-Nest;* Whittier's *How the Robin's Breast Became Red* and *King Solomon and the Ants;* Lowell's *Rhoecus* and *The Finding of the Lyre;* the Carys' *The Legend of the Northland* and *Peter at the Dyke;* Browning's *The Cricket and the Poet* and *Two Poets at Avon;* Lanier's *The Song of the Chattahoochee;* Saxe's *Robert Bruce and the Spider* and *King Solomon and the Bees;* Edwin Arnold's *How the Chipmunk Got Its Stripes;* and *The Grateful Foxes.*

In many other poems we find the stories quite ready-made for our use with little children, yet there is much that they should have which is not so well adapted in form. The teacher should be able to go to every great artist and storehouse of beauty and truth, and select and bring to the children that part of their inheritance which they are fitted to receive. She has *no right to change a story in its spirit*, but it is her privilege and responsibility to decide what they can appreciate—what she must omit and what emphasize.

For example, a little boy in the First Grade once told the story of *Pearl-Feather* as follows:

One Version of the Pearl-Feather Story

"Once there was an Indian boy, and his grandmother told him that there was a wicked giant called Pearl-Feather, and he must go and kill him. So he sailed away and came to the hissing serpents, and they told him to go back, but he killed them all, and the water was all bloody, and then he came to Pearl-Feather and fought him all day, until at last he shot him in the head, and then he put his blood upon the woodpecker's head, and made that bird red-headed."

All this certainly was in the original story: revenge, bloodshed, etc.; but when it was so emphasized that this was all the child remembered, the influence was surely not desirable.

Suppose the story had been given from another standpoint, which is equally true to the original.

Another Version of the Pearl-Feather Story

"Once there was an Indian boy named Hiawatha. One evening his grandmother led him to the great sea-water. She pointed eastward to a marshy island and said: 'Hiawatha, you are now old enough and strong enough to help your people. Upon that island lives a cruel giant called Pearl-Feather, and in the springtime he breathes out poison, and many people die each year. You must save your people from him—you must slay the giant.'

"So Hiawatha sailed away with his mittens and his arrows, and soon he came to the black pitchwater, and loud voices said, 'Go back, coward; go back, faint-heart; go back to your people!' But Hiawatha sailed right on. Then he came to the hissing serpents, and again the voices said, 'Go back, coward; go back, faint-heart; go back to your people!' But Hiawatha sailed right on. At last he came to the island, and the great Pearl-Feather rose up to meet him. When he saw him, he laughed and said, 'Go back, boy; go back, faint-heart; go back to your people!' But Hiawatha said, 'I have come to save my people.'

"All day long the contest lasted, until at length Hiawatha had but one arrow left, and that was broken. Just then Hiawatha heard a bird sing, and whenever Hiawatha heard a bird sing he listened. Then the bird told him how to aim his arrow, and the great giant fell to the earth, dead. Then Hiawatha knew that his people were saved, and he called the bird to him, and in gratitude he stained its head red with the giant's blood.

"Then he sailed home, and when the people saw him coming they made a great feast in his honor, and praised him, and offered him gifts. But Hiawatha said: 'I could not have done it alone—the woodpecker helped me. I have stained his head red with the giant's blood, and shall always wear two of his feathers in my pipe of peace.'"

This is the Indian story of how the woodpecker got his red head, and why they always called him "friend" and protected him from harm. This is the same story, with the emphasis placed upon the motive for the action, and upon the courage and gratitude of Hiawatha. Many teachers are disturbed when the children ask at the end of such a story, "Is it true?"

There is only one way of meeting such a question, that is with the simple truth. There must be some truth in the story if it is worthy of telling. The teacher should know what that truth is before she attempts to tell the story. She would probably say in this case: "Perhaps Hiawatha never lived, but many Indians have been as brave as he was; and it is true that it would be a fine thing if a boy could be that brave, isn't it? It is true that it was the right thing for him to remember that the bird helped him, and that he did not take all the praise for himself, isn't it?" I should not force these influences upon the children unless the question were asked, but if the motive for telling the story is *clear in the teacher's mind*, this question will always enhance rather than detract from the real value of the story.

Our best aid in the adaptation of stories has come to us from the children in the following manner:

It is a custom in our primary school to have a so-called "party" for twenty minutes each day. During this time some group in the room is responsible for the entertainment of the other children. They may sing a song, tell or act out a story, or play a game, but once during the week each child feels it his duty to see that every one enjoys himself. All depend upon him, and he cannot disappoint them. This is not only an excellent way to bring out the best in timid children, who often need encouragement and outside help, but through the stories selected we get at the independent taste of the different individuals.

The stories selected are not always the best, but by keeping a list of them from year to year, and carefully analyzing them, we are able, in almost every instance, to determine the reason for the choice, and profit by it in our own selection of stories.

Strong action, vivid contrasts, musical or loud sounds, the rhythm of repetition, and personal experience were the normal or average keynotes of interest.

With these facts, and knowing the influence which we wished the children to receive, we have gone to all sources—to man, nature, mythology, and the Bible—and have sought and found without difficulty just the ideas or deeds needed for immediate use. With these points in mind the adaptation takes care of itself, and the oldest story becomes fresh and attractive.—*Inland Educator, May, 1900.*

Reading Lessons for the Primary Grades

Science Series No. 5

Flora J. Cooke

Soil Game

Directions for Game

When you guess what the soil is, do not tell its name. Pass to the blackboard and write how you think it was made.

I

It came from the lakeshore.
It is white and brown.
It sparkles in the sunshine.
It can scratch glass.
It is used in making glass.
It is used in making plaster.
It is sometimes used in measuring time.
Ants build homes in it.
Cactus plants grow best in it.

II

It came from the swamp or woods.
It is black, light, and fine.
It has decayed wood and leaves in it.
It will hold more water than other soils.
It will hold water longer than other soils.
Earthworms like to live in it.
Garden plants and trees need some of it.

III

It is bluish gray, or yellow, or red.
Water can scarcely get through it.
It makes fine dust when it dries.
People make dishes and pottery of it.
They make bricks and houses of it.
There are many kinds of this soil.
Each kind has a special use.

Birds

Science Series No. 6

I

The first week in April a little boy said, "I saw a bluebird to-day."
"Oh, tell us about it!" we said.
He told us it was like the bluebird in the museum.
Its head, back, tail, and wings were blue.
Its breast was brownish red.
It was about seven inches long.
After that we watched for the bluebirds.
A great many came in April.
All the parts of the bluebird nearest the sky are blue.
The parts nearest the earth are brown.
Max said, "The bluebird makes me think of the lake.
"It is all blue on top, and all brown underneath like the sand."

II

We saw a scarlet tanager in the park one day.
His wings and tail were black.
His head, back, and breast were bright scarlet.
The scarlet tanager's mate is much smaller than he is.
She is a light brownish green.

You cannot see her among the leaves.
Often the father tanager sits on a twig above the nest and sings.
I suppose he is telling stories to his family.
If he sees any one coming toward the nest he flies away.
He goes to another tree not far away.
But the mother tanager sits still on the nest.
No one can see her. She is safe.
All the little tanagers look like their mother until they are old enough to care for themselves.

III

Did you ever see a robin hunt for worms?
How fast he runs! How wise he looks!
He goes from one hole to another.
Soon he finds a worm at home.
Then how he does pull! The worm pulls, too.
But the robin is stronger than the worm.
One day we saw a robin with a big worm.
He put it down on the ground.
He did not seem to be hungry.
We thought perhaps he pulled the worm out just for fun.
But soon he flew away with it.
Where do you suppose he went?
We know; we found out his secret.
He went to two other trees, then he went to his nest.
He still had the worm in his bill.
Perhaps he was hungry.
Maybe he thought how good it was, when he put it down on the ground.
Maybe he loved his little ones too much to eat it.
Any way, he carried it to his nest.
You should have heard the little ones chirp.

Four Riddles

Literature Series No. 8

I

We came early in the springtime.
Children love us very much.
There are many, many of us.
We are happy in the sunshine.
We are happy in the shade.
We look like gold in the grass.
After a while we look like silver.
We are short when we are young.
We grow tall as we grow older.
Once I wore a yellow dress.
Now my children dress in laces,
Soon the wind will take my children.
Then I shall be bald and lonely.

II

Crawling, spinning, shelter winning
  From the storms of winter gray,
Leaves are falling, north winds calling,
  Wait thy Easter day.

Out in the sunshine, free as air,
Flying with wings so new and fair,
High in the sunlight, low midst the flowers,
Sipping the sweets through bright summer hours.

Song Stories for Kindergarten, Patty and Mary Hill.

III

So trim and slim and gracefully thin,
With little fur leggins as tight as the skin,
With little gray mittens just to his mind,
And a little gray tail hanging down behind.

So trim and slim and gracefully thin,
With a little fur vest buttoned under his chin;
With a little fur coat nicely trimmed and lined,
And a nice little tail hanging down behind.

There's a rap and a tap, a scuffle and din,
There's a rap and a tap, but he can't get in,
Tho' he raps and taps and begs on his knees
For a crumb of cake or morsel of cheese.

For a crumb of bread, if ever so small,
For his three wee babies behind the wall,
In three gray coats, nicely trimmed and lined,
And three little tails hanging down behind.

IV

There's a queer little house—
  And it sits in the sun;
When the good mother calls
  The children all run;
While under her roof it is cozy and warm,
  Tho' the cold winds may whistle
And bluster and storm.

In the daytime that queer
  Little house moves away;
And the children run after
  So happy and gay.

But it comes back at night,
  And the children are fed
And tucked up to sleep
  In their warm, cozy bed.

This queer little house
  Has no windows or doors;
The roof has no chimneys,
  The rooms have no floors;
No fireplaces, chimneys,
  Nor stoves can you see,
Yet the children are cozy
  And warm as can be.

The story of this
  Little house is quite true;
I have seen it myself,
  And I'm sure you have, too;
You can see it to-day
  If you watch the old hen
As her downy wings cover
  Her chickens again.

The Kindergarten

Anne E. Allen

The two following stories are to be used in connection with the Kindergarten outline for March and April, which appeared in the March number of the COURSE OF STUDY.

The Work of the Winds

There was not a breath of wind blowing, away out on the lake, where a number of white sails stood waiting for a puff of wind to come and help them in to the shore.

A miller sat outside his mill waiting anxiously for enough wind to come to move the great fans that turned the wheels. He had a great deal of grain to grind for many hungry people, and until the wind came to do its work, the poor miller could do nothing.

All the weather-vanes were still, and the smoke came lazily out of the chimneys and went where it pleased, because there was no wind to toy with it.

Everything was waiting and watching for the South Wind, she of the warm springtime who brought gentle, warm rains that burst the seeds into life, and wakened all of sleeping nature.

All winter long the North Wind had been at his work, helped by the East and West winds.

"It must be too early for the South Wind, so let us have a frolic together," said the North Wind to the other two.

"Perhaps we can do her work," said the West Wind.

"I know we can do some of it," the East Wind said; and off they started together.

Away across the lake they began. First, they filled the sails of the ship out on the waters, and blew the waves higher and higher. The sailors shifted their sails first to catch this wind and then that, until they steered their boats into harbor.

Next, the fans of the great mill they caught, and the miller with glad surprise saw them begin to turn round and round, and the wheels inside began to grind the grain that had been in place waiting for so long to be turned into flour or meal.

The weather-vanes, high up on the houses, pointed now this way and now that, as first one wind blew and then another.

The boys began coming out with their kites, but the winds were too strong for any but the toughest ones, which danced and whirled away up in the air.

The clothes that hung out on the lines were soon dry enough to be taken in by the washerwomen, who had been waiting all day long, wishing for the sun or wind to come and dry them.

Then the winds began to be very mischievous. Hats were taken off of heads and blown down the streets; every bit of loose paper was caught up into the air, until there seemed to be hundreds of kites flying; the dust was blown over everything, and leaves that had been hidden all winter, with seeds tucked under them, were blown out into the air and scattered where the sun and rain were able to find them.

Soon the South Wind came. She brought with her all she was expected to bring. It was not long before the bare, brown earth was green once more; the violets and dandelions were out, and spring had really come.

Bluster, Bright, and Sprinkle

Once there were three great giants, who were the good and helpful friends of the tiny flowers, the great trees, the brooks, and all the little woodland inhabitants. Neither the blue violets nor the delicate white snowdrops could ever have wakened in the spring, nor the great red roses and yellow sunflowers could have opened their eyes in the summer; the trees could not have put on their green dresses, nor the pussy-willows have thrown off their fur caps, if Bright had not been ready to warm the big brown house where their winter's bed was found, when Jack Frost came riding on old Bluster's back. Nor could they ever have crawled into such cozy places if Bluster had not run with them and tucked them in quickly, and then with his great hand gathered up dried leaves and earth to make warm comforts for them. Who but Sprinkle would have remembered that little baby seeds get thirsty during the winter, and could have given them the good drinks and gentle pats that this great, friendly giant sent down to them?

Tightly wrapped in their beds, they lay waiting for Spring to call them; gentle, loving Spring, who always needs and calls upon her three great giant friends to help her bring the birds back home, and to waken the flower-babies and set them to work. She had sent Bright to touch, with his warm fingers, the big brown house, and had asked Sprinkle to tap at the doors and tell the little flower-people to get up. Bluster was ready to welcome them as they peeped out, and blew his warm breath on their little cold green hands.

The violets by the thousand were nodding their tiny purple caps; the snowdrops had peeped up, had finished their work, and gone to sleep again; the robins, who had gone off for their winter's trip, had come back, and the little brooks had been filled with water, and were dancing merrily among the stones, thanking old Sprinkle for the quantities of water he had brought them, while — would you believe it? — one Pussy Willow, with her little brown fur cap closely tied on, was still asleep. The violets called to her that it was time to get up, and Robin Redbreast, as he flew by, called to her, saying: "Oh, you lazy Pussy! How can you stay asleep so long, when everybody else has wakened and gone to work?" Pussy heard, but her mother had told her to wait, for Jack Frost was still lurking around and might come back, so she had best keep on her warm cap.

Bluster, Bright, and Sprinkle talked about her and wondered why she had not wakened. Sprinkle said: "I believe she is thirsty; I will give her a cool drink and bath, and maybe that will rouse her."

Bluster said: "No, she is lazy; I will shake her and make her get up."

Bright said nothing, but quietly waited. Sprinkle sent down a shower of cold water, which made Pussy draw her cap all the more closely about her.

Bluster shook her, at first gently; but, finding she would not wake up, shook harder and harder, and at last, very roughly, but Pussy did not stir.

They went back and told Bright what they had done, and how Pussy still kept on her fur cap. Bright smiled, and said, "I will see what I can do."

Calling all his little sunbeams to him, he told them Pussy Willow's story, and asked if they would like to go and help her to waken and enjoy the springtime. Joyfully they started off to work. Joining hands, they danced around Pussy, making her feel warm and comfortable. Softly and lovingly they tapped on the little fur cap.

Pussy Willow heard them, felt their warm and gentle touch; and while they worked, out she peeped, and saw her good friends and playfellows helping her. She threw off her brown fur cap, and shaking her silky gold hair, nodded and smiled at the violets and dandelions around her.

Bluster and Sprinkle shook their heads and wondered how Bright had waked her. Bright said nothing, yet still kept on working.

The next time Robin flew by he stopped to speak to Pussy, and to sit and sing to her, telling her, in his song, how sorry he was that he had laughed at her, and how glad that she had at last come out to enjoy the springtime. Pussy was happy to see all her friends again, and to swing to and fro as Bluster rocked her gently. She smiled up at Bright, who still sent his children to play with her.

She thanked Sprinkle whenever he sent her cool, fresh water to drink—as he sometimes did when the days were hot and dusty.

The last we saw of Pussy and her neighbors, she was merrily laughing, surrounded by the violets, dandelions, and spring beauties, the center of a circle, around which her three giant friends were dancing, hand in hand; Sprinkle throwing drops of crystal water over her golden yellow hair, out of which Bluster was trying to shake the drops as he blew the silky threads, and Bright smiling on her until each tiny hair looked like gold, and each drop of water a *real* diamond. ANNE E. ALLEN.

First and Second Grades

Harriet T. B. Atwood

Geography: (See I, under "Nature Study.") The geography work will be a study of the soil relations of areas visited during March and April, and it therefore will not be differentiated from the work in nature study for this month.

Field-trips proposed:

1. Visit to Beverly Hills to see the first spring flowers.
2. Visit to the ravine at Glencoe.

Nature Study: I. Soil studies, associated with the planning of a school garden. The work will be taken up as follows:

1. Selection of the best site available for a garden. Question: What factors must be considered in selecting the site?
2. Examination of the soil of chosen site. Question: What work must be done before seeds are planted? (a) Note packed condition of soil. (b) Note quality of soil.
3. Examination of the different soils which came from the various regions visited during the year. Questions: Which soil would be best for the garden? How determine the best soil?
4. Experiments to determine the relative values for garden purposes of dune sand, swamp muck, clay from bluff at Lakeside, loam from woods, soil from school-yard.

(a) To determine the capacity of various soils to retain water. Material needed: baking-powder cans with perforated bottoms, cheesecloth, 100 c.c. graduate, scales and weights.

Put given amount of air-dry sifted soil into a can with sieve bottom, over which a piece of cheesecloth is tied. Tamp gently, to imitate natural compactness as nearly as possible. Gently pour on water (using graduate so that the amount of water may be known) until it drips away below. Calculate the amount of water held by the soil in question. Use the same amount of a different soil and repeat the experiment.

(b) To determine rate of evaporation from different soils. Material needed: same as in (a). After performing the experiment as directed under (a), weigh the cans of saturated soils. Place them in the open air, and weigh at intervals of a day until they cease to lose weight.

(c) To determine the constituents of the various soils. Material needed: sieves with different sized meshes, large jar, small pans, oven.

By sifting and washing, the children will discover that the different soils contain gravel, coarse sand, fine sand and loam, in varying proportions. By weighing a given amount of soil, burning the same, and reweighing, the children will discover that some soils contain much organic matter.

The visit to the swamp will be recalled. Questions: How can the great amount of organic matter in the swamp soil be accounted for? What happens to most seeds when they are planted in soil rich in organic matter if it is kept too moist?

The visit to the dunes will be recalled. Question: What dangers await the plant that grows in very sandy soil?

(d) Seeds will be planted in series of pots containing the various soils. One series will be kept very moist, another under average conditions, and the third will be subjected to drought conditions at intervals. Questions: Which soils show disadvantages when kept very moist? Which soils show disadvantages when allowed to become dry?

5. A visit will be made to the Lincoln Park hothouse to see how the gardeners prepare their soil. A sample of this garden soil will be brought home and examined. Question: In what ways do soils become mixed in nature? Note the effect of percolating waters, of burrowing animals, of ants and earthworms.

6. Study of the work of ants and earthworms as soil-mixers.

II. The making of a spring calendar begun in March will be continued. Paintings of the outdoor landscape will be made each week, and also color records of bud development and germination of seeds taking place during April. The children will be encouraged to watch for and report all bird arrivals in the park, and time will be taken for identification of the birds reported.

Art: Painting of the April landscape. Color records of bud development and germination of seeds. Water-color sketches of the areas visited during field-trips. Painting of spring flowers or other perishable specimens collected on field-trips. Drawing and modeling of agricultural tools. Illustration of stories by means of chalk-modeling, painting, and paper-cutting.

History: Study of tools and implements used in cultivating the soil. The children will first discuss the question as to what tools are necessary for their garden work, and will plan and make simple wooden tools to use in planting seeds.

Each child will make a list of the tools which he considers necessary for good gardening. Included in these lists will be, of course, many tools having metal parts. The children will discuss ways of making some metal tools. Question: What metal shall we use?

Experiments with different metals will be made in order to determine what metal can be most easily melted, using the most intense heat at our command, the school furnace. Lead being found to answer the purpose, a pot of that metal will be melted. The children will prepare a mold of the desired tool in damp sand, into which the melted lead will be carefully poured. When cool, a wooden handle will be attached, and the tool will be used. The children will, of course, discover the disadvantages of the lead spade or shovel compared with iron tools.

The relative merits of lead, iron, steel, etc., will be discussed, and the children will read simple descriptions of how these metals were discovered and first used by man.

Literature: Longfellow, *The Birds of Killingsworth;* C. C. N. S. Reading Slips, *The Mole and the Lark; Rhœcus*, adapted from Lowell; Hawthorne, *Philemon and Baucis;* Cooke's *Nature Myths, The Story of Prometheus;* George Eliot, *Tubal Cain.*

Industrial Art: Continuation of pottery making begun in March. Casting of garden implement in lead.

Manual Training: Making of simple spear-shaped tools to be used in planting seeds. Completion of work begun in March.

Physical Training: (MISS CRAWFORD.) The work of the children during the year has been planned with reference to the spring sports. Vaulting, jumping, hurdling, and ball-throwing have prepared them for the Greek festival, and the plan for that outline will form the climax of the year's work in games.

Domestic Science: (See Miss Cooke's outline, "Cooking in Primary Grades.")

Correlated Number: Weighing of given amounts of the various soils to be used in experiments (a) and (b), (see "Nature Study.") Use of graduate and calculation of the number of cubic centimeters of water retained by each kind of soil. Weighing of saturated soil. Reweighing of same soil after evaporation has taken place. Calculation of the amount of water lost by each kind of soil in a given time.

Making of calendar for April.

Speech, Oral Reading and Dramatic Art: I. Phonic games. Dramatization of the legend of the *Sleeping Beauty* in costume.

II. Poems to be memorized: *We Have a Secret, Just We Three*; selections from *The Little Brown Seed*, by Margaret Sidney.

Music: (MISS GOODRICH.) *Little Gipsy Dandelion, The Trees, Robin's Return, Ring Around a Rosy, Wrens and Robins, The Rain, The Swallow, In April,* Modern Music Series, Primer; *Easter Song, All the Birds Have Come Again, When the Earth Wakes up in Gladness, Spring Song* (Mendelssohn), Songs for Little Children, No. 1, Eleanor Smith.

Reading: Reading lessons on *Birds, Flowers, Animals* and *Soil*, April COURSE OF STUDY. Stories of the *Earthworm* and *Ants* from *Animal Life*, by Florence Bass. Texts of songs written on the blackboard.

Additional reading lessons for Second Grade. Stories of the birds that arrive during April, Chase's *Birdland.* Selections about metal-working from *Stories of Industry.* Selections from various First Readers bearing upon the spring subjects.

Writing, Spelling, and English: Recording of observations for spring calendar. Written descriptions of the new birds and flowers seen, for other children to guess. Placing of new words in dictionary and recipes in cook-book. Recording data of experiments. Making list of necessary garden tools. The children will choose one of the stories to be dramatized and will write out their suggestions as to its dramatization.

References: John M. Coulter, *Plant Relations*, p. 160; Jackman, *Nature Study and Related Subjects*, pp. 122-126 and 149-153; *Nature Study for Common Schools*, pp. 436-438 and 390-393; Charles Darwin, *Formation of Vegetable Mould through Action of Worms;* Wright and Coues, *Citizen Bird;* F. H. King, *Soil;* Starr, *First Steps in Human Progress;* Abbot, *Primitive Industry;* Tylor, *Primitive Culture;* Chapman, *Birds of Northeastern North America;* Neltje Blanchan, *Bird Neighbors*, illustrated.

Third and Fourth Grades

Gertrude Van Hoesen

Geography: The subject of transportation as planned for March will continue through April, as it has proved to be very extensive on account of the many excursions that it is necessary to take.

During March one of the children went to Florida for two months. This opened a line of correspondence for the others, who have written letters to him, asking many questions in regard to the country, trees, fruit, flowers, soil, temperature, etc. They also asked him to paint pictures of the different trees, and to make a collection of pressed flowers.

During the last week in March they began a correspondence with a French school. France was selected for this grade, as the children have been studying French, and have become interested in the children who speak that language. The result of this work in correspondence will be regularly published.

Science and Number: A daily record of the temperature will be kept, with the record of opening buds and flowers, and of returning birds and insects.

As April is the month of the awakening of the seeds, a square foot of ground will be staked off in the school-yard, and the number of plants which sprout will be carefully noted. How were these seeds planted?

It will be interesting to continue the observation of the same square foot of soil, and to see which plants grow and which are crowded out.

One of the great activities of the spring being gardening, the children will make a small garden. What shall determine the kind of soil used?

As the children know that plants grow better in garden soil than in other soils, they will examine a definite amount of several kinds of soil with which they are familiar, as, for example, eight cubic inches of garden soil, eight cubic inches of dune soil, eight cubic inches of swamp soil, and, if possible, eight cubic inches of forest soil.

Do the proportionate quantities of sand, loam, and gravel in each affect the growth of the plants? Do the proportionate quantities of each affect the necessary amount of heat, light, and moisture that the plants receive?

Test a definite amount of sand, loam, and gravel in order to discover the tendency to: (1) allow percolation; (2) to lose moisture by evaporation; (3) hold moisture by means of capillarity. Do these tests, if made experimentally, show why plants grow best in garden soil?

During the latter part of April excursions will be taken to the woods to find the first flowers, and to watch the birds.

What effect has the temperature had upon the landscape? Find the average temperature for the month.

A record of the amount of rainfall will be kept. It will be interesting to calculate the amount of rain which the seeds in a given area received; also, the amount of water already in the soil in the same area. This will give the children a definite idea of the amount of moisture actually at the disposal of the seeds and plants in the area considered.

(Note: Whenever the process in mathematics stands between the child and the thought, he will be helped over it as quickly as possible.)

History: THIRD GRADE. (MRS. THOMSEN.) The Olympian games.

The children have previously studied the life of the Spartan boy, and also that of the Athenian boy. It is hoped that the Greek ideal, the perfectly developed, beautiful body, may have been an inspiration to the class.

A thorough study will be made of the Olympian games, with the idea of showing to the school some of the best Greek games with as much Greek feeling as possible.

1. An imaginary trip to Olympia: the plain, the Alpheus, the surrounding hills. Descriptions, pictures, and stereopticon views will be used.
2. Olympia restored: temples, statues, the stadium.
3. The games.

(a) The importance of the games shown by the fact that the sacred truce was proclaimed and that time was counted by Olympiads.

(b) The crowds assembled to witness the contests. How do they express their excitement? Why are they so anxious about who wins?

The children will understand that the honor of the victor was the honor of his native state.

4. The festival.

(a) Footrace of six hundred yards; of twelve hundred yards.

(b) Running.

(c) Jumping.
(d) Casting of spear.
(e) Casting of discus.
(f) Wrestling.
(g) Boxing.
(h) Racing with four-horse chariots.
(i) Race with full armor of heavy armed soldier.

Expression: 1. Drawing of Olympia, sand-modeling of the same, showing the geographic background.

2. Modeling of athlete—the children may choose in what position.

Vases, decoration showing Greek games.

3. Writing. Descriptions of Olympia, of the games, of statues which have been studied.

During this study the children will make notes of which games they prefer to work out to show to the school. They will be forced to consider what apparatus it will be necessary to make; for instance, a chariot for the chariot race, and also the discus, spears, etc.

The plan which the children decide upon will be the basis for the following month's course of study.

FOURTH GRADE. The Fourth Grade pupils have become extremely interested in the industries of the early Greeks, and have been casting their weapons in lead. They have been studying especially their work in metals. During April they will make a study of Greek pottery and weaving.

By means of pictures, a careful study of the shapes of the different Greek vases and cups will be made, and the meaning of their designs interpreted. Each child will then design a piece of pottery and decorate it with a scene from Greek life. The weaving will consist of designing and working out of patterns.

As the interest of the children in the games of the Greeks has been intense, in the manual training room they will make the different articles necessary to play their games.

Side by side with this early industrial history, the Fourth Grade will continue the study of the colonization of Chicago. They have studied the coming of Marquette, Joliet, and La Salle, and the first settlement of the city. The Chicago of to-day means the living together of the representatives of many nations. During April they will begin to find out what peoples are here now. The foundation for this work must be laid by excursions.

I. An excursion into the Italian settlement around Hull-House will be made.

1. How do these people live? (a) Their houses, (b) their occupations, (c) their lives.

2. From what country did they come? Study Italy, its climate, vegetation, people, labor problems, art, and music.

3. Why did they come here?

4. Have they bettered their condition?

5. Reason for their lives here.

II. This will necessitate touching the social and municipal problems and will lead to a slight study of government.

Industrial Art: During April this work will consist of weaving and the making of Greek pottery.

Manual Training: Making the articles necessary to play the Greek games.

Literature: Stories of spring: *The Sleeping Beauty*, *Brunhild*, *Balder*, *The White Man's Foot* (*Hiawatha*).

Dramatic Art: The dramatization of the spring stories.

Physical Training: (See outline for First and Second Grades.)

Music: (MISS GOODRICH.) *Easter Song*, *When the Earth Wakes up in Gladness*, *Spring Song* by Kjerulf, *Spring Song* by Mendelssohn, Songs for Little Children, No. 1, Eleanor Smith; *April Song*, *In April*, *Spring Rain*, Modern Music Series, First Book; *From a Railway Carriage*, Modern Music Series, Second Book.

Characteristic songs of the different people about whom the children are thinking will be sung to them, and they will learn the *Chinese Air*, printed in the October COURSE OF STUDY. Other songs useful in this connection can be found in the July number (*The Hunt Is Up* and *To the Maypole Haste Away*); the December number (*Christmas Song* of the peasants of the south of France, and old English *Christmas Carols*); February number (*Autrefois le Rat de Ville*); March (*Morgenlied*, and *The Forge*). Many national airs occur in the Modern Music Series, and in Songs of Life and Nature.

French: (MLLE. ASHLÉMAN.) The dramatization of *Le Grand Concert*, begun in March, will be continued in April.

During the past month the children of these grades were told the fairy-tale of *Le Prince Chéri*, and as it was related it was written upon the board for them to read.

Before continuing the story at each succeeding literature lesson, the children read aloud what had already been recorded, reminding the narrator from what point to continue.

They also made clay models representing the animals mentioned in the story.

Le Prince Chéri

Il y avait une fois un roi. Ce roi était très, très bon. Un jour le roi chassait dans une grande forêt. Tout à coup un petit lapin blanc se jeta dans les bras du roi. Le roi très étonné, prit le petit lapin, le caressa, et dit: "Ce petit lapin s'est mis sous ma protection. Je ne veux pas qu'on lui fasse mal."

Le roi porta le petit lapin dans son palais et lui donna une jolie petite maison et de bonnes herbes à manger.

La nuit, quand le roi était seul dans sa chambre, il vit tout à coup une belle dame. Sa robe était blanche comme la neige, et sur la tête elle portait une couronne de roses rouges.

Le roi ne savait pas comment elle était entrée, parceque la porte était fermée.

La belle dame lui dit: "Je suis la Fée Candide. Je voulais savoir si vous étiez bon. J'ai pris la figure d'un petit lapin, et je me suis jetée dans vos bras. Celui qui est bon pour les bêtes est encore plus bon pour les hommes. Je viens vous remercier de votre bonté. Je serai toujours votre ami. Demandez ce que vous voulez, je vous l'accorderai."

"Madame," dit le bon roi, "j'ai un fils; je l'aime beaucoup. Je l'ai nommé Prince Chéri. Soyez l'ami de mon fils!"

"De bon cœur. Le voulez vous le plus beau prince du monde, le plus riche, ou le plus puissant?"

"Je ne désire rien de tout cela," dit le roi. "Un prince peut être beau, riche, et puissant, et s'il n'est pas bon il sera malheureux. La vertu donne le contentement."

"Vous avez raison," dit la Fée Candide, "mais je ne peux pas rendre le prince bon malgré lui. Je vous promets, pourtant, de lui donner de bons conseils."

Quelques années après cette promesse le roi mourut. Le Prince Chéri pleura beaucoup, car il adorait son père.

Un soir quand Chéri était couché, la Fée Candide entra dans sa chambre.

"Mon cher enfant," dit elle, "je viens te faire un présent. Voici une bague; mets-la sur ton doigt, et garde la bien. Chaque fois que tu feras une mauvaise action elle piquera ton doigt. Si tu continues cette mauvaise action malgré la piqûre, je deviendrai ton ennemi."

Alors la Fée Candide disparut.

Un jour à la chasse Chéri ne prit rien. Il devint de mauvaise humeur; la bague lui pressa le doigt.

En rentrant dans sa chambre son petit chien vint à lui pour le caresser.

"Retire-toi," dit Chéri, "je n'aime pas tes caresses."

Le petit chien ne comprenait pas. Il tira l'habit de Chéri. Et, pensez donc, Chéri lui donna un coup de pied! Alors la bague le piqua, comme l'aiguille vous

pique quelquefois quand vous faites votre sac à ouvrage.

"La Fée se moque de moi. Ce n'est rien de donner un coup de pied à un chien."

"Je ne me moque pas de vous," dit une voix. "Vous avez été cruel!"

Pendant quelque temps Chéri fut de nouveau très sage. Un jour, pourtant, il se mit en colère contre un ami. La bague le piqua. Il n'y fit pas attention. Le sang sortait maintenant de son doigt, la bague le piquait si fort.

"Ah! je veux être à mon aise! Cette misérable bague!" s'écria Chéri, et il jeta la bague hors de la fenêtre.

Chéri devint très, très méchant. Personne ne l'aimait; il n'avait plus d'amis. Il donnait même des coups de pieds à ses courtisans.

Un jour une petite boiteuse, qui ne pouvait pas marcher très vite, arrêta sa voiture.

"Que les chevaux passent sur elle!" dit il, se levant comme un furieux.

Alors il entendait un coup de tonnerre, et Candide parut à ses yeux.

"Vous êtes devenu un monstre. Je vous condamne à devenir semblable aux monstres auxquels vous ressemblez." La Fée disparut.

Chéri se trouva dans une grande forêt, sur le bord d'une fontaine, où il vit son horrible figure. Il ne pouvait pas supporter sa laideur, et entra très vite dans le bois.

Tout à coup il tomba dans un trou fait pour prendre les ours. Des chasseurs, cachés sur des arbres, descendirent et le conduisirent dans là ville de son royaume.

Chéri entendit des canons lorsqu'il approcha la ville. Un chasseur demanda ce que c'était.

"Oh! un coup de tonnerre a pris le méchant Prince, et aujourd'hui on offre la couronne à Salioman, l'ami de son père."

Au souvenir de son père pour la première fois Chéri se mit à réfléchir.

"Oui, j'ai été bien, bien méchant! Je ne suis pas même assez puni."

On mit Chéri dans une grande maison où l'on gardait les bêtes féroces.

Chéri était doux comme un mouton et très obéissant, parcequ'il voulait être bon et réparer ses fautes. L'homme qui le gardait était brutal et le battait souvent.

Un jour cet homme était endormi. Un tigre qui avait rompu sa chaîne se jeta sur lui pour le dévorer.

"Je rendrais le bien pour le mal," se dit Chéri. "Je sauverai la vie de cet homme."

A peine eut-il formé ce souhait, que sa cage s'est ouverte, il s'élança au côté de l'homme qui s'était réveillé, étrangla le tigre, et se coucha aux pieds de son gardien.

On entendit une voix qui disait, "Une bonne action est récompensée."

Chéri, le terrible monstre, devint un joli, joli petit chien, que le gardien porta chez lui.

Chéri était très heureux maintenant. Il n'avait pas toujours assez à manger, parceque le gardien était très pauvre, mais il oubliait la faim quand il jouait avec le petit bébé, la chère petite fille du gardien.

Un dimanche matin pour son déjeûner Chéri reçut un grand morceau de pain. Il faisait très chaud. Chéri se décida d'aller manger son pain près de la rivière. Près de la rivière il vit un petit savoyard, qui arrachait des herbes pour les manger.

"Pauvre petit, j'ai aussi bon appétit, mais je peux attendre le dîner," et Chéri mit son pain devant le petit savoyard, qui le mangea tout de suite.

Chéri entendit une voix qui disait, "Une bonne action est récompensée," et aussitôt Chéri fut changé en un magnifique oiseau de paradis. Il s'envola avec joie.

"Maintenant je peux chercher la petite boiteuse que j'ai presque tuée."

Un jour, perché sur un arbre, il la vit

dans une petite chambre. La fenêtre était ouverte, et il vola sur l'épaule de la petite boiteuse. La pauvre enfant, charmée de ce bel oiseau, le caressa et lui dit:

" Mon bel oiseau, restez donc avec moi. Je suis si triste, si seule. Vos belles plumes sont si gaies, que ma chambrette commence déjà à me sourire. Mais," dit elle, tristement, "vous préférez la liberté et les forêts."

"Je resterai toujours chez vous. La vraie liberté c'est de faire le bien."

A ces paroles la Fèe Candide quitta la forme de la boiteuse.

"Mon enfant," dit elle avec tendresse, " je vais vous transporter dans votre palais. Vous êtes digne de porter une couronne."

Chéri régna longtemps. Un jour il épousa même la plus belle princesse du monde.

Fifth Grade

Clara Isabel Mitchell

Cooking: In March, milk and eggs, as examples of albuminous foods, were chosen for the children's experiments and study.

Sugar, starch, and the albumen of the egg were tested for solubility in both cold water and hot. Sugar was seen to dissolve in either the hot or cold; albumen, in the cold only; starch, partly, in the hot.

The cooking temperature of egg was found to be between 160° and 180° F.; and that of starch was boiling point or about 212°.

Custard and poached eggs were prepared for luncheon, and later, sponge cake at the solicitation of the children. This work took the time of three lesson periods of an hour and a half each.

EXPERIMENT FOR DETERMINING THE COOKING TEMPERATURE OF ALBUMEN.

Fill a test-tube one-third full of white of egg, and immerse it in a beaker of cold water, placed upon a piece of wire gauze on a ring-stand, and fasten it in place. Immerse in the test-tube a thermometer, and gradually heat the water in the beaker, noting carefully the temperature at which the egg begins to show white threads, that at which it grows creamy throughout, and that at which it becomes hard. Finally, boil the egg for some minutes, and examine its texture.

RECIPE FOR SPONGE CAKE.

1 egg.
3 tablespoons of sugar.
3 tablespoons of flour.
½ teaspoon lemon juice.
Speck of salt.

Beat the yolk of egg till thick, and add the sugar gradually, beating all the time. When very light add the lemon juice and salt, and the white of egg beaten stiff. Last, put in the sifted flour, and bake in a moderate oven.

Weaving, spinning, and the hand-work followed the plan outlined in the March COURSE OF STUDY.

History: The work in history, as indicated by the last month's plan, was in the aboriginal life of North America. From stereopticon views, maps, and pictures the class got sufficient knowledge of the geography of the continent to be able to arrive at many of the facts of Indian history. These were added to by a visit to the Columbian Museum, class reading of *The American Indian*, by Frederick Starr, and bits read or told by the teacher from Fiske's *Discovery of America*, *Smithsonian Reports*, Bancroft's histories, and Prescott's *Conquest of Mexico*.

During April, the reading will be continued; and the two months' work summed up in the painting of pictures and in written descriptions.

Geography: In March, the class began modeling and drawing the map of North America from a map thrown on the screen by the stereopticon. Attention was first called to the great central valley, the children discussing its advantages and disadvantages as a home for tribes of savages. Both highlands were studied with the same question in mind; then the coast regions. These were drawn, modeled, and described in writing. At the same time, typical areas were painted from the memory of stereopticon views and pictures, with the idea of making the landscape in color a part of the image of the continent.

In April, the Central Plain will be studied in greater detail, the climate, as determined by distance from the equator, returning trade winds, and the Rocky Mountain barrier on the west; great river systems, their work in erosion, in irrigation, their fitness for navigation, and use made of them by the Aborigines; soil, its composition and use to Indians. After this we shall begin the study of the Appalachian Highland in detail. From pictures, the children will get an idea of the forms of the mountains; geological specimens in the museum will tell of their composition, and from these something of their geological history will be inferred; pictures will also tell stories of the vegetation; the relief map will show the river basins.

While modeling this the children will read from: Tarr and McMurry's *Geography;* Shaler's *Our Continent;* Frye's *Geography; The Natural Geography;* and Carpenter's *Geography of North America.*

Oral Reading: (Miss Fleming.) Work outlined for February was interrupted by preparation for Washington's Birthday exercise. Consequently the dramatization of *Rip Van Winkle* was continued into March.

The part taken in the Washington Birthday exercise was the representation of a field school at the time of Washington. All the class took part in dramatizing a scene.

The stage is set with a table for the teacher and benches for the children—the desks being only slanting boards to uprights.

The teacher, one of the children, enters first, dressed in Continental costume (made of blue denim), bright red waistcoat, white wig (made of cotton batting), cocked hat (made of black cardboard), low shoes with gold buckles. He lays aside his hat and cane, arranges the bunch of birch rods and the dunce cap while the children come in and take their seats. The teacher then bows formally to the school, and the children rise and bow.

Teacher (rapping upon the desk with ruler). The A-B-C-Derian will step forward.

(Smallest boy in the class goes to the teacher, horn-book in hand. The horn-book is a thin piece of wood four or five inches long, and about two wide, with the A, B, C's, large and small, printed on its face, and covered with isinglass which is tacked down with strips of metal along its four edges. In addition to the A, B, C's is either the Lord's Prayer or the Ten Commandments.)

Teacher (frowning, takes out large penknife and points to the letters of the hornbook). What's that?

Child (slowly and with effort). A—a.

Teacher. What's that?

Child. B—b.

Teacher. What's that?

Child. C—c.

Teacher. What's that?

Child. D—d.

Teacher. What's that?

Child. Don't know.

Teacher. Don't know? What's that?

Child. (Repeats the A—a, B—b, C—c, D—d, but again fails on E—e).

Teacher (in disgust). Don't you know E? Say "E."

Child. I can't.

Teacher. Go to your seat, dunderhead!

(Gradually falls asleep, when another child asks first one why he did not say "E.")

Second Child. Can't you say "E"?

First Child. Yes; but if I'd said "E," I'd have had all those others to say, too! Didn't you see that long string of letters after E?

Teacher (waking up, raps on the table). First scholar in reading! (Another child steps to the teacher's side and laboriously spells out each word of the first sentence of the fifth commandment before pronouncing it.)

Teacher. The A-B-ab's will now take their places. (Entire class stands in line for spelling.)

Child at head of class. B-a, ba; b-e, be; b-i, bi; b-o, bo; b-u, bu.

Next child. D-a, da; d-e, de; etc. (These exercises were given with f, m, and n.)

Teacher (pompously). We will now try the *new* method of spelling. Gizzard!

Child. G-i, izzard, izzard, a-r-d, izzard, gizzard.

Teacher. Hopkinson.

Answer. H-o-p, hop, there's your hop, k-i-n, kin, there's your kin, there's your hopkin, s-o-n, son, there's your son, there's your kinson, there's your Hopkinson.

(In the same way words are spelled and missed—damnify, confounded, Liverpool, and incomprehensibility. After several children miss on incomprehensibility, George Washington is called for, spells it correctly, and goes to the head of the class.)

Teacher (rapping on the table). Declamations will now be given. Richard Henry Lee!

Richard Henry Lee (coming forward and bowing). "Corruption is in the heart of a child, but the rod of correction shall drive it from him!"

Teacher. Very excellent! Elizabeth Peyton!

(Elizabeth comes forward, giggles, attempts to speak and cannot. Teacher places dunce cap on her head, and stands her on a chair under the printed sign:

"This is a sight to give us pain,
Once seen, ne'er wished to see again."

Elizabeth slyly makes faces to the children while teacher is not looking.)

Teacher. Elliot Taylor!

Elliot Taylor.

"Have communion with few,
Be intimate with one,
Speak kindly to all,
Do evil to none!"

(At the last word he kicks the boy in the front seat, the boy howls, and both are switched with the bunch of birches.)

Teacher. Constance Randolph!

Constance Randolph.

"Our days are filled with trouble here,
Our life is but a span."

Teacher. Patrick Henry!

Patrick Henry.

"You'd scarce expect one of my age
To speak in public on the stage;
So if I chance to fall below
Demosthenes or Cicero,
Don't view me with a critic's eye,
But pass my imperfections by.
Great streams from tiny fountains flow,
Great oaks from little acorns grow."

(The above is not strictly legitimate, as it was written later than the time represented.)

Teacher. We will now be dismissed.

(Children rise one by one, bow to teacher, and leave the room.)

Out on the playground they shout and say: "What shall we do, boys?" "Let's go fishing!" "No — that's no fun!" "Let's ask George what to do—what shall we do, George?" "Let's play soldier." "Hurrah for George! Soldier!" "French on this side, I'm Captain!" "English on this side, George is Captain!"

The French band drills a bit, marches and countermarches at command of their captain, then goes into ambush. The other band drills under George Washington, marches, countermarches, and is fired upon by the French, whereupon they attack and rout the enemy, all under the leadership of young George; and so the little play ends.

The boys' costumes are like that of the teacher, excepting that the wigs are made of dark curled hair. The waistcoats are of bright shades, all different, made of dress linings. The girls wear little print gowns made with long skirts, plain waists cut low in the neck, tight-fitting sleeves to the elbow, white ruffles in the neck and sleeves; white muslin caps.

References: Barnard's *Child Study; New England Primer;* Ella Morse Earle's *Children of Colonial Days.*

In April the oral reading will be *The One-Hoss Shay,* by Oliver Wendell Holmes.

Number: In March the children made a chart to show weights of different kinds of foods which make up the diet list of the adult person. The list given by Mrs. Norton was: Meat or substitutes, 3 lbs. per week; fruit, 3 lbs.; flour or grains, 5 lbs.; vegetables, including potatoes, 5 lbs.; sugar, 1 lb.; butter, .8 lbs. On the chart 1 square inch was made to represent 1 lb. The sugar was indicated by 1 inch square, the butter by $\frac{4}{5}$ of 1 inch square, the meats by rectangles 1 inch by 3 inches, the flour and vegetables by rectangles 1 inch by 5 inches. The whole weight of the week's food was 17.8 lbs., or nearly 18 lbs. A rectangle 9 inches by 20 inches or one 6 inches by 3 inches was made to represent the entire weight.

The following statements were the matter on the chart:

Weight of meat= $\frac{3}{18}$, or $\frac{1}{6}$, or $16\frac{2}{3}\%$ of whole weight of week's food.

Weight of vegetables, $\frac{5}{18}$, or $27\frac{7}{9}\%$ of whole weight of week's food.

Weight of flour= $\frac{5}{18}$, or $27\frac{7}{9}\%$ of whole weight of week's food.

Weight of butter= $\cdot\frac{4}{5}$, or $\frac{4}{90}$ of $\frac{1}{18}$, or $\frac{4}{5}$ of $5\frac{5}{9}\%$ $=4\frac{4}{9}\%$ of whole weight of week's food.

Weight of sugar= $\frac{1}{18}$, or $5\frac{5}{9}\%$ of whole weight of week's food.

Weight of sugar= $33\frac{1}{3}\%$ of weight of meat or fruit.

Weight of sugar= 20% of weight of flour and vegetables.

Weight of sugar= 125% of weight of butter.

Weight of butter= 80% of weight of sugar.

Weight of butter= $26\frac{2}{3}\%$ of weight of meat or fruit.

Weight of butter= 16% of weight of flour or vegetables.

Weight of fruit or meat= 300% of weight of sugar.

Weight of fruit or meat= 60% of weight of flour or vegetables.

Weight of fruit or meat= 375% of weight of butter.

Weight of flour or vegetables= 500% of weight of sugar.

Weight of flour or vegetables= 625% of weight of butter.

Weight of flour or vegetables= $166\frac{2}{3}\%$ of weight of meat or fruit.

In changing the fractional form to percentage, the children had difficulty in finding equal parts of 100%. They were then given a little work in finding the areas of rectangles as a help to the idea of factoring. They worked out many simple problems, and then were able to formulate the statement that, "one factor of a number being given, the other factor may be found by dividing the number by the known factor."

Many of the class were found to be so slow in the process of long division that they were given abstract problems in this subject to work out at home.

The number lessons in April will be a

part of the nature study for the month, and part of the geography.

Growth of the elms, oaks, willows, birch, ash, maple, and ash-leaf maple twigs will be measured, and averages taken. These averages will be compared and stated in per cents. Weights of carbon, water, and ash in all will be found by drying, charring, and burning; these will be compared.

In drawing and modeling the map, we shall have the average heights of the highlands and great plains of the continent, also exact heights of peaks. We shall then get approximate width and length of continent. These figures, when compared, will show at once the impossibility of making a relief map to a scale which works both vertically and horizontally.

We shall therefore decide on two scales —one for expressing length and width, the other for altitudes. While this scale will not be carried out too rigidly, it will help to a clearer image of exact conditions. The amount of rainfall will be recorded throughout the month, and compared with the average rainfall for this month.

Nature Study: (WILLARD STREETER BASS.) METEOROLOGY: The weather record will be continued as in previous months. The northward movement of the sun will be observed with the skiameter. The vernal equinox, which occurred in March, afforded an opportunity for observing the mean elevation of the sun, and of estimating the mean daily amount of light and heat received from it. Comparisons were made with the corresponding amounts received at the winter solstice, and the reason for the winter cold thereby made very apparent.

BOTANY: The work of the month will be a study of the distribution and protection of the living tissues of a tree during the cold weather, and a study of the properties of wood.

The pupils will bring twigs and small branches of trees into the classroom, and by making sections will endeavor to discover the portions from which the growth of the tree will start in the spring. They will then observe how these parts (the buds and the cambium) are protected from the cold, and will make drawings showing the structure and arrangement of the living parts and their protection.

From the study of the parts of the tree which are ready for the coming year's growth, the pupil will find it an easy step to the study of the parts which grew last year. He will be supplied with a small sapling, and beginning from the newest or end section of a twig, will trace back the woody tissue which is continuous with it, until he sees that the latter leads him to the outermost annual ring in the stem. The growth of the previous year may be traced out in the same manner, and the pupil should continue the process until he sees that the general shape of a year's growth of a tree is that of a hollow cone.

The above fact determines the grain of the wood, and is of great commercial importance. To discover the relation between the surfaces which separate the growth of different years, and the grain, the pupils will be supplied with pieces, several feet in length, of small saplings of pine, oak, and other woods. They will first examine the ends of each stick, count the annual rings at both ends, to see whether they are the same or not, and notice the medullary rays. They will then cut the saplings lengthwise with splitting saws, once through the center, and once near the bark. The surfaces should then be smoothed with a plane until the grain shows clearly. The lines which separate the growth of different years can now be traced through the entire length of the stick, and are seen to form the most prominent part of the grain. The pupil will make drawings of the grain in the three sections which he has before him, and will study how a log should be cut to give a desired kind of grain in the board. Let him decide from what part of the log the wood was cut to make his desk, the wainscoting in the hall, and various articles of furniture.

The class will visit some large woodworking establishment, such as the Pullman car-shops, or Lyon & Healy's factory, and observe what kinds of wood are used for various purposes, and the manner in which they are sawed and finished to exhibit the grain to best advantage.

This excursion will be followed by a study of the qualities of a wood which determine its desirability for various purposes; namely, beauty (which is dependent upon graining and color), strength, elasticity, hardness, durability, and ease of working. Such collections as Hough's American Woods are the most convenient way of exhibiting the beauty of various kinds of wood.

The comparative elasticity and strength of various woods may be tested in the laboratory in the following manner: Let each pupil be given a different kind of wood to work with, and let him make it into a stick twenty inches long and one-half inch square. Let the stick be supported one inch from each end, and let the pupil apply a weight of ten pounds to the center, and notice carefully to what extent the stick is bent by the load. Then let him add ten pounds more, and again measure the bending, and so continue until the stick breaks. The load at which breaking occurs should be carefully noted, and the results of the work upon each kind of wood compared one with the other in respect to both strength and elasticity.

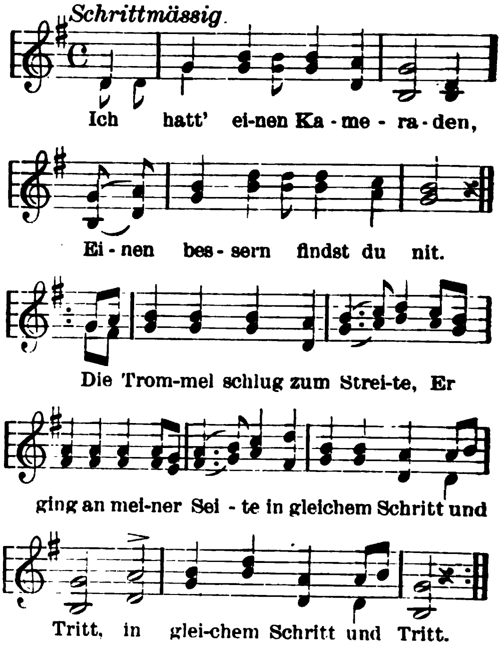
References: Pinchoy, *A Primer of Forestry*, Ch. I and II, Bul. 24, Division of Forestry, U. S. Dept. of Agriculture; Dana, *Plants and their Children*, p. 119; Murchie, *Object Lessons in Elementary Science*, Vol. II, pp. 183–198; Bergen, *Elements of Botany*, pp. 52–72.

Music: (Miss Goodrich.) *A Spring Morning*, *In Spring*, *Spring Rain*, Modern Music Series, Second Book; *O Hemlock Tree*, Modern Music Series, Third Book; *Spring Greeting*, *Spring Festival*, *Spring Song*, *The Oak*, Songs of Life and Nature; *The Brave Old Oak*, November Course of Study.

German: (Dr. Benignus.) During April and May the pupils will learn Ludwig Uhland's march, *Der gute Kamerad*, and sing it according to the melody of Friedrich Silcher.

Der gute Kamerad

Nach einer Volksweise von Friedr. Silcher.


Schrittmässig.
Ich hatt' ei-nen Ka-me-ra-den,
Ei-nen bes-sern findst du nit.
Die Trom-mel schlug zum Strei-te, Er
ging an mei-ner Sei-te in gleichem Schritt und
Tritt, in glei-chem Schritt und Tritt.

Eine Kugel kam geflogen:
  Gilt es mir oder gilt es dir?
Ihn hat es weggerissen,
Er liegt mir vor den Füssen,
  Als wär's ein Stück von mir.

Will mir die Hand noch reichen,
Derweil ich eben lad',
" Kann dir die Hand nicht geben;
Bleib' du im ew'gen Leben,
Mein guter Kamerad."
Ludwig Uhland. Um 1810.

The pupils have been studying under the teacher of geology the subject of rivers. The following outlines will serve as reading matter and for exercises in grammar.

Studien an Flüssen

Wenn Regen auf das Land fällt, so sickert ein Teil des Wassers in den Boden, ein anderer wird in die Luft aufgenommen, und ein dritter fliesst auf der Erdoberfläche hin. Dieses Wasser, das auf dem Lande fliesst, wollen wir betrachten.

Was bemerken wir, wenn wir einen Fluss nach einem starken Regen sehen? Ist das Wasser klar, oder hat es Bestandteile des Bodens aufgenommen? Ist die Gestalt des Bettes verändert? Wodurch ändert sich das Bett?

Manche Flüsse führen so viel erdige Bestandteile mit sich, dass das Wasser eine gelbliche Farbe erhält. Diese Stoffe sind meist Sand und Lehm. Was geschieht mit diesen Stoffen? Was können wir an der Mündung des Flusses sehen?

Diejenigen unter Euch, die einen Fluss zu verschiedenen Zeiten des Jahres sahen, wissen, dass das Wasser bald hoch, bald niedrig stand.

Was ist der Grund für diesen Wechsel? Fliesst der Fluss immer mit gleicher Schnelligkeit? Wann führt der Fluss am meisten Stoffe mit sich?

Was könnt Ihr sehen, wenn ein Fluss im flachen Lande über seine Ufer tritt?

Alle diese Verschiedenheiten werden wir in der freien Natur selbst lernen, wenn wir dieses Frühjahr nach den Schluchten nördlich von Chicago gehen.

Sixth Grade

Edith Foster Flint

Nature Study: The subject for the month is germination. In order to obtain the fullest results the class will be divided into committees. To each of these will be given a special topic with related problems. The reports of the committees, together with the discussions and experiments arising therefrom, will constitute the classroom work.

It is greatly to be regretted that the situation of the school precludes the possibility of each child's having a garden laboratory to which the other children may have access for confirmation of his reports. In default of this, each pupil will be required to provide for himself at home, either in his yard or in a window-box, such a plot of earth, from which he can bring specimens to the school for the benefit of the class.

The committees will be divided on the basis of the five great requisites of the germinating plant: (1) moisture, (2) heat, (3) soil, (4) light, (5) air. In connection with each of these topics suggestive questions will be asked, and others will necessarily grow out of the pupil's experience with his material.

I. Moisture: 1. How much moisture is there in the soil at the disposal of the germinating seed?

2. Could more plants be produced, if the same soil and temperature were used, but more moisture?

3. Is there any difference in variation of temperature in wet and in dry soil?

4. Choose one kind of plant in your plot, and show its changes in growth and color each week by painting, recording the amount of moisture in the soil on the day you make the painting.

II. Heat: 1. Compare the temperature of a water area with that of your plot. In which place do plants first appear?

2. Can more plants be produced if the same soil and same amount of moisture are kept, with the temperature raised or lowered?

3. Record the variations of temperature from day to day. What protection have the plants against these changes?

4. At what temperature of air and soil did seeds begin to sprout in your plot?

5. Test temperature at different levels of the soil.

6. Paint, as in I.

III. Soil: 1. Observe and record the growth of seed in different sorts of soils, compact and loose, clayey, loamy, and sandy. How did you obtain the different soils?

2. Paint, in each case, as in I.

IV. Light: 1. Devise experiments to show whether or not light is necessary for germination. Consider (a) the length of time necessary for sprouting; (b) the number of seeds which sprout.

2. Have the plants more or less light than they would have had last month? Why?

3. Show by painting each week the changes in the growth and color of (a) plants with all light obtainable; (b) plants with little light; (c) plants with no light.

V. Air: 1. Is there circulation of air in the soil?

2. What agencies tend to keep the soil porous?

3. Is circulation of air necessary to the plant? Devise an experiment to determine this, considering (a) length of time necessary for sprouting; and (b) number of seeds which sprout.

4. Paint as in I.

It will be noticed that the pupils are asked to devise experiments, instead of being told specific experiments to perform. It is believed that if they think out their own devices, the subject will open up to them much more fully and become much more truly their own.

Number Work: The number work will be drawn largely from the nature study. For specific problems see Jackman's *Nature Study for the Grammar Grades*, pp. 362-367.

Expression in Painting: Besides doing the painting mentioned above, the children will continue the work of the landscape calendar, making a sketch each week, since from this time on the changes will occur with considerable rapidity.

References: Lubbock, *Seedlings*, Vol. I, p. 150; Vines, *Physiology of Plants*, pp. 46-95; Kerner and Oliver, *Natural History of Plants*, Vol. I, pp. 379-395; Dana, *Plants and Their Children*, Part II; Jackman, *Nature Study for the Grammar Grades*, pp. 350-368.

Geography and History: As it has been found that the work on Europe planned in geography, and that on the Crusades planned in history, will cover fully two months, no new outlines in these departments will be offered this month. It should be said here, however, that special emphasis will be laid on feudalism and chivalry, as the work for the succeeding months of the year in this grade will be not so much historical as literary, dealing as it will with the Arthurian legends and kindred subjects. It has been thought best to lay considerable stress on literature from this time forth, for the reason that the history subjects up to this point (namely, China, Marco Polo, and India) have been deficient in literary material adapted to the needs of this grade.

Art: The work as outlined in the March number will carry over into a second month.

Oral Reading: *Storming of the Castle*, adapted from *Ivanhoe; Young Lochinvar. The Vision of Sir Launfal*, by Lowell, will be read to the children.

Music: (MISS GOODRICH.) *King Richard, Lion-Heart, Sword Song, The Crusade,* Songs of Life and Nature; *A Spring Morning, In Spring, Spring Rain,* Modern Music Series, Second Book; *Spring Greeting, Spring Festival, Spring Song,* Songs of Life and Nature.

French: (MLLE. ASHLÉMAN.) The French in the month of March centered on the cause and the beginning of the Crusades. This was done in dramatic form.

In April *The Children's Crusade* will be dramatized, it being the most characteristic development of the unnatural religious condition of the age.

Une Soirée Chez Fadette
ou
La Croisade des Enfants

Personnages: Madame Lemaître, Fadette, Lucile, Henri, Pierre, Guillaume, Jean.

(Petit salon. Madame Lemaître et les enfants sont réunis autour de la cheminée le soir après dîner.)

Fadette. Maman, veux-tu nous faire un grand plaisir?

Mme. Lemaître. Volontiers, mignonne, si c'est dans mon pouvoir. De quoi s'a-git-il?

Fadette. Des Croisades des Enfants. Qu'est-ce que c'est que La Croisade des Enfants en France? Mon histoire n'en dit presque rien.

Henri. Un jeune berger entreprit cette Croisade, n'est-ce pas, Maman?

Mme. Lemaître. Oui, chéri, tu as raison. Ce jeune berger, nommé Etienne, parcourait le pays. Il appelait à lui tous les enfants.

Lucile. Il venait du village de Cloyes, près de Vendôme. Papa me l'a dit lorsque nous étions en Vendôme l'année passée.

Mme. Lemaître. Guillaume, va vite en haut chercher mon album. J'y ai une belle photographie de ce village.

Guillaume. Oui, Maman. Je serai tout de suite de retour.

Pierre. Mais pourquoi commença-t-il cette Croisade?

Mme. Lemaître. Il se croyait envoyer de Dieu pour la délivrance de la terre sainte. (*Guillaume ouvre la porte.*) Ah! voici Guillaume avec la photographie. Merci, mon fils.

Guillaume. Du tout, Maman.

Mme. Lemaître. Venez voir, mes petits. (*Les enfants se groupent auprès du fauteuil de Madame Lemaître et regardent la photographie.*)

Jean. Je suis très intéressé. Veux-tu continuer, Maman?

Mme. Lemaître. Eh bien! le berger, Etienne, disait que c'était les enfants que le Seigneur aimait, que les flots même s'ouvriraient pour livrer passage à une troupe composée d'enfants, et que les Sarrasins s'enfuiraient devant elle.

Jean. Les enfants sont-ils allés?

Mme. Lemaître. Oui, garçons et filles quittèrent leurs parents et suivirent Eteinne en désordre, vivant d'aumônes sur la route.

Fadette. Mais, Maman, les parents ont-ils permis aux enfants de partir?

Mme. Lemaître. Le sentiment religieux de cette époque était tellement surexcité que loin de les arrêter on les encourageait. Innocent III. lui même loua leur résolution. Çette troupe d'enfants, qui etait forte de plus de trente mille, traversa toute la France et atteint Marseille.

Pierre. Ici la Méditerranée leur barra le passage, n'est-ce pas, Maman?

Mme. Lemaître. En effet, c'est ce qui arriva. La mer ne s'ouvrant pas et le miracle se faisant attendre, il fallut recourir à des moyens plus humains. Sais-tu ce qu'ils ont fait, Lucile?

Lucile. Non, Madame.

Jean. Moi, à leur place, je serais retourné chez moi.

Fadette. Oh, Maman! vite, la fin de l'histoire!

Mme. Lemaître. Eh bien, il y avait à Marseille deux armateurs. Les pèlerins s'adressèrent à ces notables commerçants du grand part. Les armateurs s'engagèrent à les transporter gratuitement en Orient.

On remplit sept vaisseaux de ces enfants. Deux de ces vaisseaux coulèrent sur en îlot des côtes de Sardaigne. Le pape Grégoire y éleva une église plustard aux "Saints Innocents." Les cinq autres arrivèrent heureusement à Bougie et à Alexandrie. Mais ici les marseillais vendirent tous les malheureux enfants aux marchands d'esclaves.

Fadette. Oh, c'est affreux, cela!

Henri. Ne les a-t-on jamais rétrouvés?

Mme. Lemaître. Un petit nombre recouvra la liberté dix-sept ans plustard, après la paix entre Frédéric II. et le Sultan Alkamie. Le gouverneur d'Alexandrie en mit du coup en liberté environ sept cents.

Lucile. Quelle triste Croisade!

In connection with this history work we will plan a little trip through France, from Vendôme to Marseilles.

German, Sixth, Seventh, and Eighth Grades: (Dr. Benignus.) The books selected for reading in class and at home are:

Books named for the Fifth Grade (see Course of Study for March); *Grimm's Märchen*, Heath & Co.; *Aus dem Märchenlande*, Gust. Weise, Stuttgart; *Knecht Ruprecht*, illustrated almanac for boys and girls, Schafstein & Co., Köln; *Deutsche Götter und Heldensagen*, arranged by Hermine Möbius, Alex. Köhler, Dresden and Leipzig; *Deutsches Knabenbuch* and *Deutsches Mädchenbuch*, K. Thieneman, Stuttgart; *Junge Mädchen*, arranged by Frida Schanz, Velhagen und Klasing, Bielefeld und Leipzig.

The artistic illustrations of these books illumine the contents, which are contributed by famous German writers, for the most part of the present time, and these serve for amusement as well as for instruc-

tion and various recreative employments in school and at home.

The pupils, after having been made acquainted with the participation of the Germans in the Crusades, will learn the results of the Crusades. The following outlines in German will serve as reading lessons, and for exercises in grammar.

Folgen der Kreuzzüge

Die Kreuzzüge wurden unternommen zur Eroberung Palästinas und zum Sturze der muhamedanischen Macht. Dieser eigentliche Zweck wurde trotz aller Opfer an Blut nicht erreicht. Doch waren die Folgen von höchster Bedeutung für das mittelalterliche Europa.

1. Der Urheber der Wallfahrten ins heilige Land war die Kirche. Die Kreuzfahrten erhöhten die Macht und das Ansehen der Kirche im allgemeinen und ihres Oberhauptes, des Papstes, in besondern.

2. Viele adelige Herren erlitten auf den Kreuzfahrten den Tod oder gerieten in Gefangenschaft. Die Lehen derselben wurden dann oft frei. Der Landzuwachs vergrösserte die Hausmacht der Fürsten.

3. Mancher Ritter war genötigt, zur Ausrüstung Geld aufzunehmen. Die Gemeinden schossen dasselbe oftmals vor und erkauften sich dadurch die Freiheit von ihren Herren. So entstanden neue selbständige Gemeinden.

4. Der Leibeigene, der einen Kreuzzug mitgemacht hatte, wurde frei. Er konnte nach seiner Rückkehr den Acker als freier Mann bebauen. Dies förderte das Aufkommen eines freien Bauernstandes.

5. Für den Handel eröffneten sich neue Richtungen, was besonders zur Blüte der italienischen Republiken (Venedig, Genua) beitrug.

6. Die im Orient gewonnenen Anschauungen trugen zum Fortschritt der geistigen Bildung bei, besonders in geographischen und naturhistorischen Kenntnissen.

7. Vorzüglich wurde die Poesie durch neue Stoffe bereichert.

8. Die Kämpfe mit den tapferen Muhamedanern bildeten den weltlichen Ritterstand aus, diese schönste Erscheinung des Mittelalters.

9. Die Kreuzzüge veranlassten die Stiftung von drei geistlichen Ritterorden: Templer, Johanniter, Deutscher Orden.

The following poem, selected for memorizing, expresses the ardent longing of a valiant Crusader for his home, the beautiful forest of Thuringia.

Im Lager von Akkon, 1190

Kampfmüd und sonnverbrannt
Fern an der Heiden Strand
Waldgrünes Thüringland
    Denk ich an dich.
Mildklarer Sternenschein,
Du sollst mir Bote sein,
Geh,' grüss' die Heimat mein
    Weit über Meer!

Feinden von allerwärts
Trotzt meiner Waffen Erz;
Wider der Sehnsucht Schmerz
    Schirmt mich kein Schild.
Doch wie das Herz auch klagt,
Ausharr' ich unverzagt:
Wer Gottes Fahrt gewagt,
    Trägt still sein Kreuz.

Joseph Viktor Scheffel, 1826-1886;
"Frau Aventiure."

Seventh and Eighth Grades

Nott William Flint

Geography: In connection with the history—England—the class will study the geography of Scotland, Denmark, Scandinavia, and Ireland. The geography of Scotland, brought in to reinforce the inquiry into the Pictish and Scottish harassings of Roman Britain, will serve as an example of folding, faulting, and erosion. Denmark (and Jutland), taken up in the consideration of the Saxon and Danish invasions, will bring in the study of sand dunes. The Norse invasions will, of course, introduce the geography of Scandinavia, and in that connection a further study of the effect of ocean winds and currents upon climate. And in Ireland, the home of the Celts, the class will note the formation of peat bogs, the laying down of future coal beds.

I. SCOTLAND: 1. (a) Folding, (b) faulting, and (c) erosion. (a) When the European plateau was ridged up from the sea, the northwestern part of Scotland was a center of great disturbance. (b) Faulting: Consider the highlands, the central lowlands, and the southern uplands of Scotland. The boundaries of these divisions are marked by nearly parallel lines of faulting, running from northeast to southwest. (c) Erosion: Scotch highlands were caused by rain and frost.

2. Geography and history: The relation of these subjects will be kept as closely as possible in the children's minds. Let them work out typical questions. What would happen to the Picts in Scotland if there came a powerful invasion of Scots from Ireland? Why did the Gaelic clan system and language maintain itself longest in the highlands? The central lowlands were at one time part of the kingdom of Northumbria. Why did they not remain so? Why are Wales and the Welsh people so distinct a division of England to-day? (Note: these questions should all be answered from the point of view of geography).

II. DENMARK (and Jutland): Teutonic invasions of England. Same latitude as Scotland south of Inverness. Surface, heather-covered moorland. Western shore low, sandy, and unindented (dunes). East coast higher and more indented. Area, 15,289 square miles. Population, 2,185,335. What is the density? (Note that Elsinore, the scene of *Hamlet*, was in Denmark.)

III. SCANDINAVIA: (The Norse invasions.) 1,160 miles long and 230 to 470 miles wide. 1. Ocean currents. Why is it that on the long west coast on the Atlantic the harbors remain open all winter long, while on the east coast they may be blocked with ice for six months at a time? (Study here the differences and the cause of the differences between continental and ocean climates.) Account for the fact that there are 35 inches of rainfall on the west coast and about 13 on the east.

2. Geography and history: Why are the Norwegians and the Swedes, originally one people, now quite different? Norway has 3,500 square miles available for pasturage and agriculture, and Sweden 19,000 square miles. Which probably has the larger population?

3. Drowned valleys: Let the children account for the long fiords and the island-guarded coast of Norway.

IV. IRELAND: On the edge of the European plateau.

1. Surface is a shallow basin, with the highlands along the coast. What would be the effect of this configuration on the character of the people? Compare with the coast of Norway. Note that the eastern and western river systems rise on an imperceptible watershed.

2. Geography and history: No iron or coal to speak of in Ireland. What is the effect on the people? How do they live? Population in 1881 was 5,174,836, and in 1891 was 4,704,750. What probably caused the decrease?

V. ISLE OF MAN: Equidistant from Scotland, Ireland, and England. The Manx people.

VI. CHANNEL ISLANDS: Geologically and historically a part of Normandy. Language and customs.

References: Mill, *International Geography;*

Chisholm, *Commercial Geography;* Reclus, *Earth and Its Inhabitants;* Whymper, *The World, Its Cities and Peoples.*

Number Work: Area of United Kingdom in 1891 was 120,979.

1. Population of United Kingdom in 1881 was 35,241,482; in 1891 it was 38,104,975. What was the number of persons per square mile? In 1881? In 1891? What was the gain in population per year?

2. Scotland contains 29,785 square miles of area, and 4,025,647 population. 70% of Scotland is highlands, and 23% of population is in highlands. How many square miles is highlands? How many people live in highlands? Density of population in highlands? In lowlands?

3. England has 27,483,490 people. Area of England, 50,867 square miles. What is density of population? London County has an area of 118 square miles, and a population of 4,232,118. What is the density of the population?

4. Area of Norway, 124,454 square miles. Population, 1,813,424. Area of Sweden, 170,722 square miles. Population, 4,565,668. What is density of population in each?

(These questions will be found useful for reinforcing the geography and the history of these countries.)

History: The subject for April will be, "How Britain Came to be England," and if time allows, the "Norman Conquest." The children will not be hurried, however, since they are getting a social point of view in their history, rather than a succession of confusing political changes.

The class began English history with the study of prehistoric man in Britain. After the Cave Men, the children took up the Gauls and Celts, the study of Druidism, and the Roman occupation of Britain. From the Romans and Celts to the Saxons and Angles will be the next step, and will introduce the beginning of modern English history.

I. The making of England.

1. Departure of the Romans. Remains of Roman civilization in England. See pictures, etc. The class may take up here, also, the great Teutonic migrations, and the policy of Augustus not to extend farther the Roman frontiers, but to make them impregnable as they were.

2. Harrying of Romanized Britains by Picts and Scots.

3. Disunity of Britons.

4. The British invitation to the Saxons. The story of Arthur and his Round Table will come in, and the children will read the *Passing of Arthur* from the *Idylls of the King.*

5. The Saxon success in Britain. Due to what? Resulted in what? What became of the Picts and Scots? The question: what the Saxons did to the Britains—what proportion they killed, what proportion they absorbed, and how many they drove back among the mountains of Wales and Scotland, should prove an interesting inquiry here. (Note: See geography outline.)

6. The Saxon Kingdoms: Sussex, Wessex, Essex, Norfolk, Suffolk, Mercia, and Northumbria. (a) The Jutes, Angles, and Saxons.

7. Religion of Saxons: Mythology of Thor and Woden. Gregory and the Angles. Augustine and the conversion of England. Probable effect of Christianity on the English. Stories of the Venerable Bede.

8. Union of Saxon Kingdoms: Egbert and the six boy kings. (Charlemagne's School of the Palace.)

9. The Danish invasions of England: Alfred the Great. The work of Alfred.

II. The Saxon society: (Note: The subject will not be taught as divided in the outline, but the second part will be, in teaching, melted into the first according to the desire of the teacher.) The ideas and customs of the Saxons will be much emphasized, for the germs of social and political life which Henghist brought over in his piratical ship, although changed and developed from age to age, are still, in essence, at the heart of the English life and constitution.

1. Saxon speech: Perhaps the modern Low-Dutch will be the best comparison for the children.

2. Family life: Show how the family idea was at the root of everything in Teutonic society.

(a) The three Teutonic classes: (Note: These classes should be emphasized, since as an institution they will explain much in later English history.) Eorl (earl); ceorl (churl); thrall (slave or servant). (1) Eorl: noble by birth; privileges not oppressive; entitled to respect. (2) Ceorl: a freeman; might be a land-owner, citizen, or a soldier. (3) Thrall: either a captive of war, or a freeman guilty of certain crimes. Servile condition inherited by children.

3. Saxon law: The jury; the ordeal.

4. Community idea: This idea began very early to leaven Teutonic society. Each man owed allegiance to his community. Compare the Greek and Italian cities. In this connection show how personal leadership began to break in on the community idea. The popular leader and his personal following; he became the *hlaford*, or "loaf-giver," who was to reward his followers for their personal service. The rise of the nobility, or thegns.

5. Tenure of land (folkland): At first land was primarily the property of the community, but private property in land gradually arose. Every war tended to increase the holdings of the powerful, and contrariwise with the weak. Thus the personal relation, and the person gained in power and wealth always at the expense of the public and the community.

6. Assemblies: The meeting of the wise men. A whole body of freemen saying *yea* and *nay* to the proposals of the presiding chief. How would the increasing number of people at increasing distances inevitably affect such meetings? The evolution of the parliament. Compare with the New England town meeting.

7. The idea of king: The children should clearly understand that chieftainship among the Saxons meant an *office* and not a *property*. And as an office it demanded what qualifications? The king must be of the stock of Woden, but kingship was in no sense held to be hereditary. Note: What effect would the Saxons' invasion of England have on the Saxon laws and customs? Would not the invaders be compelled to organize their society more closely for the sake of protection? What would be the effect of this community life? On the nobility? On the kingship?

References: Green, *The Making of England*; Freeman, *Growth of the English Constitution;* Allen, *Anglo-Saxon Britain;* Guizot, *History of France;* Taswell-Langmead, *English Constitutional History;* Scott, *Ivanhoe;* Tennyson, *Passing of Arthur;* Longfellow, *Sagas of King Olaf.*

Expression: The pictures which may be made by the children to reinforce the history are of course innumerable. Scenes from the various countries may prove very helpful to the class.

Oral Reading: (Miss Fleming.) Parts of *Ossian*, *Lady of the Lake*, and an adaptation from *Ivanhoe* of *The Storming of the Castle.*

Nature Study: The course planned for last month has not been touched at this date, March 12th, and will not be taken up till April.

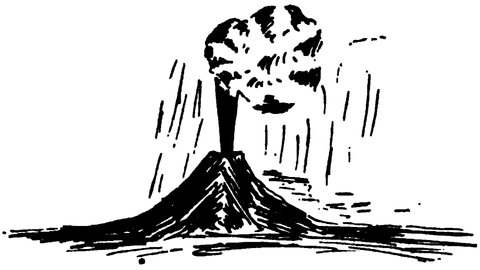
Latin: (See Miss Stilwell's outline for the Ninth Grade.)

Music: (Miss Goodrich.) *The Hardy Norseman*, *Norse Lullaby*, *First Grass*, *Spring Song*, p. 83, *Spring Song*, p. 104, *Coming of Spring*, Modern Music Series, Third Book; *Spring Song*, *Spring Festival*, *Spring Greeting*, *Balder the Beautiful*, Songs of Life and Nature.

English: In the Seventh and Eighth grades there are no hours set apart for the teaching of English as such. Whatever instruction in the ordering and expressing of their thought (and this is to be understood as embracing grammar, spelling, penmanship, and punctuation) the pupils have had, they have got incidentally through their written expression in many different subjects. The topic might be the account of a laboratory experiment, a report of a field-trip, a description of peoples or of places in their history studies, or a bit of geographical exposition. As few limitations as possible were set upon the work; for instance, the length of each paper was determined absolutely by the child, it might be one sentence or it might be five pages. In this way the pupils have probably done a great deal more writing than they would have been asked to do in a regularly planned course of composition, but there has been no set number of papers per week. And since, so far as possible, they were asked to write only when they had shown interest in their subject and some knowledge of it, they never went at writing with the cold horror of the child who sits down to do his weekly or monthly essay.

The following paper, the work of an Eighth Grade boy of thirteen years, was written the day after the class had attended a stereopticon lecture and discussion on volcanoes. It is printed without alteration:

LIFE HISTORY OF A VOLCANO.—When a volcano is about to begin life, the first evidence it gives of its appearance is a low rumbling sound, and various sharp explosions. Earthquakes are also frequent. Then, as the hot lava under the crust of the earth comes in contact with water under the earth, steam is quickly formed, which rends and cracks the rock. After this process the lava keeps gradually rising until it finally overflows, and, running down the sides of the cone, forms a layer of lava.



Then the first real eruption comes, with its rumblings and crashing explosions, and lava flows. The eruption throws up ashes and volcanic dust, too. These last named substances fall around the crater and form a separate layer, thus helping to make the mountain higher. After an indefinite number of such eruptions, the volcano reaches its maturity, and the process of wearing away, or erosion, begins. Rivers form on the sides of the mountain, and rain also helps to wear the rock and dust away. This process continues until nothing is left of the mountain except the hard lava around the crater. This curious formation is called a volcanic plug.

French: (MLLE. ASHLÉMAN.) The study of the Norman Conquest will be continued in April, showing William now the *conqueror* of England.

Guillaume le Conquérant

[AVERTISSEMENT: Edouard le Confesseur est mort. Harold, le brave, le riche, dès son avènement au trône se montre juste et sage. Il soulage le peuple d'un partie des impôts qu'il avait coutume de payer, il distribue de l'argent aux pauvres. Cependant il ne peut triompher de la tristesse dont tous les coeurs sont saisis, et que rend encore plus profonde l'apparition d'une comète, qui portait trois longs rayons, et qui éclaira la plus grande partie du sol pendant quinze nuits.]

Scène I

Le vieux moine, Elmer, versé dans l'astronomie, se promenant. Il lève les yeux vers le ciel et laisse tomber ces paroles prophétiques.

Elmer. Te voilà donc enfin revenue, meurtrière des enfants, tristesse des mères, et présage certain de nos malheurs! Il y a bien des années que je t'aie vue briller; mais tu me parais plus terrible aujourd'hui que tu m'annonces la ruine de l'Angleterre par un bras étranger.

[AVERTISSEMENT: Guillaume le Conquérant, débarqué en Angleterre, va camper près de la ville de Hastings. Tout fuit devant lui. Harold se met en marche vers Hastings. Il s'arrête à quelque distance du camp des Normands, et se retranche derrière des fossés et des pallissades. Il envoie des éclaireurs chargés de parcourir sous un déguisement le camp de Guillaume.]

Scène II

Harold (*à un des éclaireurs*). Avez-vous observé les dispositions et le nombre des troupes du duc de Normandie?

Un éclaireur (*sérieusement*). C'ést une armée de prêtres!

Un autre éclaireur. Ils ont les deux lèvres rasées!

Troisième éclaireur. Ils ont aussi les cheveux courts!

Harold (*souriant*). Ce ne sont point des prêtres, mais de braves gens de guerre, invincibles dans les batailles.

Un des chefs Saxons (*s'avance vers Harold*). Vous dites, mon roi, des gens de guerre, invincibles dans les batailles? Je vous conseille alors de ravager le pays!

Un autre chef Saxon. Ah! Harold, il nous faut affamer ces Normands.

Un troisième chef. Replions nous sur Londres où s'organise la levée de la nation!

Harold. Par ma foi! ce serait trahison. Je ne détruirai point le pays qui m'a été donné en garde.

Scène III

14 october, 1066, un peu avant l'action de la mémorable bataille de Hastings.

Le duc porte au cou, suspendues par des chaînes d'or, les plus vénéres des reliques sur lesquelles Harold avait proféré son serment. Il parcourt le front de bataille de son armée sur un magnifique cheval d'Espagne. Il veut leur communiquer son ardeur.

Harold. C'est maintenant que vos bras doivent prouver de quelle force vous êtes doués, quel courage vous anime. Si vous combattez comme des hommes, vous obtiendrez la victoire, de l'honneur, et des richesses. Autrement vous servirez de jouets aux plus cruels ennemis, et vous serez couverts d'une ignominie éternelle. Il vous faut vaincre ou mourir. Le ciel vous sourit, et la victoire couronnera vos efforts.

Les Normands (*enflammés d'ardeur, répondent, en poussant leur cri national*). Dieu aide! Dieu aide!

(*On entend les Anglais qui crient avec force*). Cross of Christ! Holy Cross!

Scène IV

Harold, percé á la tête d'un coup de flèche, succombe. Un Normand veut mutiler avec son épée le cadavre du roi.

Guillaume. Quel acte de lâcheté! Vous serez dégradé du rang de chevalier. (*Se tournant vers le ciel.*) Rendons grâces à Dieu de la victoire dont il vient de couronner nos armes.

[Avertissement: Harold est mort; le grand conseil national proclame Edgar, prince faible, jeune, sans expérience, dépourvu de capacité, roi d'Angleterre. Son avènement consomme la perte du royaume.]

Scène V

Camp de Berkhampstead dans le Hertford.

Le jeune roi, Edgar, les archevêques Stigand et Eldred, les prélats, thanes, et bourgeois s'avancent vers le camp, tristes, solennels, portant des otages.

Edgar (*à Guillaume, lui offrant les otages*). Ces otages répondent de notre soumission, nous vous jurons la paix et la fidélité.

Guillaume. Je vous promets d'être doux et clément pour vous et pour votre grande cité saxonne.

L'Archevêque Stigand. Nous avons coutume d'obéir à un roi, nous voulons avoir un roi pour maître, nous ne connaissons personne plus digne que vous de nous gouverner, nous vous offrons la couronne.

Guillaume. J'hésite à prendre le titre de roi des Anglais. Je veux consulter avec mes chevaliers dont j'ai éprouvé la sagesse et la fidélité.

Vicomte Aimery de Touars (*s'écrie*). C'est par trop de modestie de consulter des chevaliers pour savoir s'ils veulent que leur seigneur soit roi. Il ne faut pas différer par nos débats ce que nous désirons voir s'accomplir sans délai.

L'Archevêque Eldred. Ne refusez pas la dignité que vous offre volontairement les Anglais.

Guillaume. Je me rends aux voeux et aux conseils de mes braves Normands. Je fixe la fête de Nöel, qui est prochaine, pour la cérémonie de mon couronnement. (*Regardant le champs de bataille.*) Sur ce champs de bataille un couvent sera construit, le grand autel sera élevé au lieu même où l'étendard du roi Harold a été renversé, et ce monastère sera appelé:

Abbayé de la Bataille.

The High School

Latin, Eighth and Ninth Grades: (KATHARINE M. STILWELL.) A few traditions connected with the early history of Rome were given in the March COURSE OF STUDY. The Latin was simplified so that beginners could read it without too much trouble, and those topics were chosen which showed how the Romans regarded the gods as helping to start their race and government. This month there is still further material of the same sort, though somewhat more difficult, the stories showing how the gods helped to found Rome through Romulus, and to give it laws through Numa.

The reason for choosing these stories is not that they all happened, but that they all represent what the Romans believed to have happened, and so give the ideas and the ideals of the Romans. They believed that they were a people chosen and directed by the gods to establish law and order in the world, and these stories will disclose that belief to the students in the concrete form in which it was held by the Romans themselves.

The passage from Caesar's Gallic War is given to test the ability of the students in reading a piece of Latin in its original form, as well as to arouse their curiosity and ambition.

Latin Lessons for Eighth and Ninth Grades

Number VI

Romani Imperii Exordium

Proca, rēx Albānōrum, Numitōrem et Amūlium fīliōs habuit. Numitōrī quī nātū māior erat, regnum relīquit; sed Amūlius, pulsō frātre, rēgnāvit et Rheām Silviam, ēius fīliam, Vestae sacerdōtem fēcit, quae tamen Rōmulum et Remum geminōs ēdidit. Amūlius parvulōs alveō exposuit abiēcitque in Tiberim, quī tunc fōrte super rīpās erat effūsus et mox relābens eōs in siccō relīquit. Vāstae tum in iīs locīs sōlitūdinēs erant. Lupa ut fāmā trāditum est, ad vāgītum accurrit, īnfantēs nūtrīt et linguā lambit.

Cum lupa saepius ad parvulōs reverterētur, Faustulus, pāstor rēgius, eōs tulit in casam et Accàe Laurentiae dedit coniugī quae puerōs ēducāret. Adultī deinde hī inter pāstōrēs prīmō lūdicrīs certāminibus vīrēs auxēbant, deinde ā rapīnā pecorum arcēbant latrōnēs, quī posteā Remum cēpērunt. Tum Faustulus indicāvit Rōmulō, quis esset eōrum avus, quae māter. Rōmulus statim armātīs pāstōribus Albam properāvit, frātrem līberat, occīsō Amūliō avum Numitōrem in rēgnum restituit. Deinde Rōmulus et Remus urbem in iīsdem locīs, ubi expositī ubique ēducātī erant, condidērunt.

Romulus, Romanorum Rex Primus

Rōmulus imāginem urbis magis quam urbem fēcerat; incolae deerant. Erat in proximō lucus; hunc asȳlum fēcit. Et statim eō mīra vīs latrōnum pāstōrumque cōnfūgit. Cum vērō uxōrēs ipse populusque nōn habērent, legātōs circā vīcīnās gentēs mīsit quī societātem cōnūbiumque novō populō peterent. Nusquam benīgnē fīnitimī lēgātiōnem audīvērunt, sed plerique rogāvērunt; "Cūr nōn fēminīs quoque asȳlum aperuistis?"

Rōmulus lūdōs parat; deinde fīnitimīs spectāculum indīcit. Multī convēnērunt ut urbem novam vidērent, māximē Sabīnī cum līberīs et coniugibus. Ubi spectāculī tempus vēnit, eōque conversae mentēs cum oculīs erant, tum sīgnō datō iuvenēs Rōmānī discurrunt et virginēs rapiunt.

Numa Pompilius, Romanorum Rex Secundus

Successit Rōmulō Numa Pompilius, vir inclitā iūstitiā et religiōne. Is Curibus, ex oppidō Sabīnōrum, accītus est. Quī cum Rōmam vēnisset, ut populum ferum religiōne mītigāret, sacra plūrima instituit. Lēgēs quoque plūrimās et ūtilēs tulit. Ut vērō māiōrem īnstitūtīs suīs auctōritātem conciliāret, simulāvit sibi cum deā Egeriā esse collēoquia nocturna. Lūcus erat, quem medium fōns perennī rigābat aquā; eō saepe Numa sine arbitrīs sē inferēbat, velut ad congressum deae. Ita omnium animōs eā pietāte imbuit, ut fidēs āc iūsiūrandum nōn minus quam legum et poenārum metus cīvēs continēret. Bellum quidem nūllum gessit, sed nōn minus civitātī prōfuit quam Romulus. Ita duo deinceps regēs, ille bellō, hīc pāce, civitātem auxērunt.

Vocabulary

sacerdōs, ōtis, *priest, priestess.*
tamen, adv., *notwithstanding, yet, still.*
geminī, ōrum, m., *twins.*
ēdō, 3, *give out, give birth to.*
parvulus, a, um, *small, little.*
alveus, ī, *a wooden vessel, trough.*
abiciō, 3, *throw away.*
rīpa, ae, f., *bank, shore.*
effūsus, a, um, *poured out.*
mox, adv., *soon.*
relābens, entis, *flowing back.*
siccus, a, um, *dry.*
lupa, ae, f., *she-wolf.*
fama, ae, f., *report, tradition.*
vāgītus, ūs, m., *cry, wailing.*
nūtriō, 4, *nourish, nurse.*
lambō, 3, *lick, lap.*
casa, ae, f., *cottage, hut.*
certāmen, inis, n., *contest.*
pecus, oris, n., *cattle, flock, herd.*
arceō, 2, *shut up, keep off.*
latrō, ōnis, m., *robber.*
avus, ī, m., *grandfather.*
properō, 1, *hasten.*
frāter, tris, m., *brother.*
restituō, 3, *replace, restore.*
magis, adv., *more, rather.*
quam, adv., *as, than.*
incola, ae, f., *inhabitant.*
vīs, f., *strength, force.*
cōnfugiō, 3, *flee together, take refuge.*
vērō, adv., *in truth, indeed.*
lēgātus, ī, m., *ambassador.*
lēgātiō, ōnis, f., *embassy.*
circā, prep., *around, among.*
conubium, ī, n., *marriage, right of intermarriage.*
petō, 3, *strive for, seek.*
quoque, conj., *also, too.*
conversus, a, um, *turned.*
rapio, 3, *seize and carry off.*
inclitus, a, um, *famous.*
acciō, 4, *summon, invite.*
lēx, lēgis, f., *law.*
ūtilis, e., *useful.*
auctōritās, ātis, f., *authority, influence.*
collōquium, ī, n., *conversation.*
fōns, fontis, m., *spring, fountain.*
rigō, 1, *water, irrigate.*
arbiter, trī, m., *spectator, witness.*
congressus, ūs, m., *meeting.*
imbuō, 3, *wet, steep, fill.*
poena, ae, f., *punishment.*
cīvitās, ātis, f., *citizenship, state.*
prōsum, *be useful to, benefit.*

Gaul

(From Caesar's Gallic War, I, 1)

The Nations of Gaul

Gallia est omnis dīvīsa in partīs trīs; quārum ūnam incolunt Belgae, aliam Aquītānī, tertiam quī ipsōrum linguā Celtae, nostrā Gallī appellantur. Hī omnēs linguā, īnstitūtīs, lēgibus inter sē differunt. Gallōs ab Aquītānīs Garumna flūmen, ā Belgīs Matrōna et Sēquana dividit.

Their Characters Compared

Hōrum omnium fortissimī sunt Belgae; propterеā quod ā cultū atque hūmānitāte prōvinciae longissimē absunt, minimēque ad eōs mercātōrēs saepe commeant atque ea quae ad effēminandōs animōs pertinent important; proximīque sunt Germānīs quī trāns Rhēnum incolunt, quibuscum continentur bellum gerunt. Quā dē causā Helvētiī quoque reliquōs Gallōs virtūte praecēdūnt, quod ferē cotīdiānīs proeliīs

cum Germānīs contendunt, cum aut suīs fīnibus eōs prohibent aut ipsī in eōrum fīnibus bellum gerunt.

The Territories of Each

Eōrum ūna pars, quam Gallōs obtinēre dictum est, initium capit ā flūmine Rhodanō; continētur Garumnā flūmine, Oceanō, fīnibus Belgārum; attingit etiam ab Sēquanīs et Helvētiīs flūmen Rhēnum; vergit ad septentriōnēs. Belgae ab extrēmīs Galliae fīnibus oriuntur pertinent ad īnferiōrem partem flūminis Rhēnī, spectant in septentriōnem et orientem sōlem. Aquītānia ā Garumnā flūmine ad Pȳrēnaeōs montīs et eam partem Ōceanī quae est ad Hispāniam pertinet; spectat inter occāsum sōlis et septentriōnes.

(Relief map of Gaul will be used.)

Vocabulary

NOUNS.

mercātor, ōris, m , *a trader.*

virtūs, ūtis, f., *courage.*

proelium, i, n., *battle.*

fīnis, is, m., *end,* (plural) *boundaries.*

bellum, i, n., *war.*

septentriōnēs, m., *the north.*

sōl, sōlis, m., *the sun.*

mōns, montis, m., *a mountain.*

occāsus, us, m., *a setting.*

VERBS.

incolō, 3, *inhabit.*

commeō, 1, *go back and forth.*

praecēdō, 3, *precede, surpass.*

prohibeō, 2, *hold off, restrain.*

VERBS.

obtineō, 2, *hold.*

contineō, 2, *hem in.*

attingo, 3, *touch.*

vergō, 3, *slope.*

orior, 3 (deponent), *arise, start.*

pertineō, 3, *tend, extend.*

specto, 1, *look at, face.*

ADJECTIVES.

trēs, *three.*

fortis, e., *brave.*

cotīdiānus, a,um, *daily.*

oriēns, entis, *rising.*

ADVERBS.

proptereā quod, *because.*

continenter, *continually.*

ferē, *almost.*

Ninth and Tenth Grades

Latin, Ninth and Tenth Grades: (ALLEN W. GOULD.) During March the pupils read (B. G. I., 2-29) about the attempt of the Helvetii to move out of their country. They were encouraged to study the account as a chapter in universal history, as well as one of the earliest pages of modern European history. When they read in *Caesar* that this people wished to leave their country because it was too small for them, the students were asked to measure Switzerland, and learn the character of its surface and the number of inhabitants to the square mile, so that by comparing it with some other half-civilized country they could judge how far the Helvetii really were crowded. The pupils had already learned from their study of the condition of the Gauls and Germans, that the less civilized people require more room, so that they were ready to ask themselves what they would have felt like doing if they had been Helvetians in Caesar's time. They were then asked what they would have done if they had been Haedui or Sequani, threatened with invasion by the Helvetii and their allies. Then the attempt was made to have them put themselves in Caesar's place, as the governor of the province and the defender of Roman civilization, and ask themselves what they would have done. One result of this study was that the students were eager to know just what Caesar did do, and whether it was possible for him to have done better than he did.

Caesar's rapid journey from Rome to Geneva required the pupils to measure the distance traveled, and to learn the character of the country. This brought up the nature and meaning of Roman roads, while the hurried return of Caesar to Northern Italy to bring back all his legions across the Alps, that he might check the

Helvetii, served as an object-lesson to show how the roads enabled Rome to protect any part of her government, by concentrating all her forces on that point, thus establishing peace in all her wide domain, and making the growth of civilization possible. The students are also asked what they think should be the result of the still more rapid transit which the railroads give us to-day.

As this was the first campaign of the students, they studied with some detail the Roman and Gallic implements of war. The weapons of the two races were compared with each other, showing the higher stage of development to which the Romans had attained. They were also compared with the weapons of early savages and of the civilized races of to-day, and an attempt was madė to have the student see the gradual growth from the primitive stone or stick to the machine gun. In conclusion, the pupils were asked which of these weapons they thought would be likely to prove most peaceful—most successful in keeping the peace.

During the month of April we expect to read the story of Ariovistus and the Germans (B. G. I.; 30-54), and we shall try to see what it might have meant to the world and the Anglo-Saxon race of to-day if the Germans of the first century B. C. had overrun Gaul and destroyed Rome before the Gauls had time to absorb the Roman civilization. The account of the German culture, which the students have just read, and the invasion of the Cimbri and Teutones, which they read last fall, have given them some idea of the elements involved in the problem.

Greek, Ninth and Tenth Grades: (Allen W. Gould.) During this month the beginners in Greek will continue reading easy Greek, as outlined in the March Course of Study.

German, Ninth and Tenth Grades: (Dr. Siegfried Benignus.) To assist the pupils in acquiring a clear understanding of Greek history, German continues to be correlated with this study in the way explained in the former numbers of the Course of Study. The subject for April will be the time of Alexander the Great, illustrating his expeditions to Greece, Asia, and Africa, and his vast plan of Hellenizing the Orient.

Reading: Continuation of *Picture Book*. Exercises in the language of everyday life: Questions and answers about traveling. The memory work is Eichendorff's beautiful hymn to the German forest. The pupils will also sing it according to the well-known melody of Felix Mendelssohn-Bartholdy.

Der Jäger Abschied

Wer hat dich, du schöner Wald,
Aufgebaut so hoch da droben?
Wohl den Meister will ich loben,
So lang noch mein' Stimm erschallt.
Lebe wohl,
Lebe wohl, du schöner Wald!

Tief die Welt verworren schallt,
Oben einsam Rehe grasen,
Und wir ziehen fort und blasen,
Dass es tausendfach verhallt:
Lebe wohl,
Lebe wohl, du schöner Wald!

Was wir still gelobt im Wald,
Wollen's draussen ehrlich halten,
Ewig bleiben treu die alten:*
Deutsch Panier, das rauschend wallt,
Lebe wohl!
Schirm' dich Gott, du schöner† Wald.

Joseph Freiherr von Eichendorff, 1788–1857.

*Variation: *alten, Bis das letze Lied verhallt.*

†*Deutscher.*

French, Ninth and Tenth Grades: (Lorley Ada Ashléman.) During April, Alphonse Daudet's *La Dernière Classe*, as dramatized by these grades, will be publicly presented. *Le Siège de Berlin*, also by Daudet, will be read during this month, as well as *Le Savetier et le Financier* from La Fontaine's *Fables*.

For the grammar work, the four regular conjugations will be finished, together with the conjugations of the most common irregular verbs.

History: Ninth, Tenth, and Eleventh Grades: (GUDRUN THORNE-THOMSEN.) The dominant idea in this month's work will be:

What ideals and ideas did Greek civilization give to the world—in government, art, philosophy, literature, science, and social life?

What aspects of our modern civilization owe their origin to the Greeks?

What features and ideas would seem familiar to an Athenian introduced into our modern society?

I. Greek drama. The *Antigone* of Sophocles will be read and discussed. The pupils' motive in this study will be the same as in the modeling of the Parthenon, mentioned in last month's outline, namely, through a study of Greek art to get an insight into the ideals and ideas of which it is an embodiment. Points for discussion:

1. Part played by the theater in Greek social life.
2. How supported.
3. Relation to religion.
4. To what would it correspond in modern life?
5. Purpose of the dramatist.
6. His popularity.
7. Comparison of Greek and modern drama.
8. Function of the actor on Greek, on modern stage.
9. *Antigone* of Sophocles. (a) Construction of the play. (b) Part played by the chorus. (c) Discussion of characters. (d) What impelling forces move the characters? (e) What great principles seem to underlie Greek society, judging from the drama? (f) Religious and social ideas shown in the drama.
10. The children have already modeled in clay the Greek theater, and are thus familiar with its different parts. The mechanical aspect of the stage performance will be considered; for instance, the revolving doors, the scenery, etc., as well as the costumes of the actors, masks, etc.

II. Political ideals of the Greeks.

1. Abstracts from Aristotle will be read.
2. Greek idea of state compared with modern.
3 What are the principles of democracy?
4. How carried out in the Athenian government? In ours?
5. In studying the political ideals underlying the Athenian democracy, the children will always remember their own position as citizens of a democratic community in school and at home, and will make comparisons of their own struggle for self-government with that of the Greeks.
6. Function of government in Greece in the United States.
7. Limitation of Greek political ideals.
8. Reading in class Plato's criticism of Athenian democracy.
9. How far does Lincoln's definition of democracy - "government of the people, by the people, for the people" - apply to the Athenian constitution ?
10. What is our political inheritance from Greece?

As the election of the chief executive of our city occurs in April, we shall make a study of municipal affairs in Chicago. What are the duties of the mayor, of the council? How are they elected? What are the departments of our municipal government, and how are they conducted? Relation of city government to that of the state?

The children will be divided into groups and report on the above topics.

III. Social ideals of Greek civilization.

1. Cohesive forces of Greek society? Of modern society?
2. For what purpose was it organized?
3. What qualities enabled the Athenian to fulfill his duties as a citizen?
4. What is expected of our citizens?
5. Position of slavery in Greece.
6. Industrial life in Greece compared with modern.
7. Difference between slave and free labor.
8. Compare industrial life in the South before and after the Civil War.
9. Effect of slavery upon artistic and intellectual progress in Greece; effect on moral character; on stability of the state.
10. Treatment of the slaves in Athens and of the serfs in Sparta. Quotations from Aristotle concerning slavery.
11. At what cost was Greek civilization carried on?
12. Slavery as an institution.

13. Position of woman in Athens and in Sparta.

IV. Greek philosophy and thought.

1. Favorable conditions.

2. Life and character of Socrates. Read in class his speech at the trial.

3. Debt of modern thought to Greek philosophers.

4. Abstracts from Plato's dialogues. Emerson's estimate of Plato.

5. Prose writers. The great historians: (a) Herodotus, "the father of history," "the prince of story-tellers." (b) Thucydides. Compare his style with that of Herodotus. (c) Plutarch. What constitutes a good biography?

6. Discuss and criticise this statement by Henry Maine: "Nothing moves in this world that is not Greek in its origin."

Art Expression: The modeling of the Parthenon will be completed.

Dramatic Expression: Scenes from the *Antigone* of Sophocles.

Written Work: Character studies from the *Antigone*. Papers will be written on some of the above topics.

Physiography, Ninth Grade: (WALLACE W. ATWOOD.) Subject: VOLCANOES. This work will be introduced through the study of lantern-slides, pictures, and written descriptions of recent volcanic outbursts. By these means the students should become familiar with the chief phenomena associated with the life history of a volcano, and be prepared, with facts and interest, to discuss the causes for vulcanism, and to arrange the facts collected in an orderly way.

I. Phenomena preceding eruption.

Read story of Monte Nuovo, a small volcano on the north side of the Gulf of Naples.

1. Examples of great earthquakes; 1755, at Lisbon; 1888, at Charleston, S. C.; 1812, in lower Mississippi Valley.

2. Distribution of earthquakes: Common in southern Italy, in young block mountains, in lofty mountains, in Japan, among the Azores, in Peru, Equador, etc.

3. Results from earthquakes.

4. Causes for earthquakes.

II. Growth of volcanoes.

1. Material thrown out, such as dust, bombs, blocks of rock, gases, and steam. Read story of Krakatoa.

2. Lavas and lava flows (kinds of lavas should be studied from specimens).

(a) Surface of flows.

(b) Cooling of lavas.

(c) Rate of flow. How does this change as cooling goes on? Find figures regarding flows of Vesuvius and Mauna Loa.

(d) Caves in lava flows.

3. Formation of craters. Study Monte Somma and Crater Lake.

III. Draw a cross-section of a great volcano which has been built up by a succession of explosions and outpourings of lavas.

(See section in Mill's *Realm of Nature.*)

IV. Development of cinder cones.

1. Their form.

2. Their structure.

V. Dissection of volcanoes and lava flows.

1. Development of mesas.

2. Occurrence of volcanic necks.

VI. Distribution of volcanoes.

VII. Distribution of great lava flows. In this connection study central France, the Faroe Islands, Giant's Causeway, the Columbia plateaux of Washington, Oregon and Idaho, the western slope of the Sierra Nevada Mountains, the Hawaiian Islands, and India.

VIII. Causes of vulcanism.

Art Expression: Modeling in sand and with chalk: Cinder cones, calderas, volcanic peaks, such as Mount Shasta or Hood, Monte Somma and Vesuvius, lava flows, etc. Water-colored paintings of volcanic mountains and lava plains.

References: Davis, *Physical Geography;* Diller, *Mount Shasta;* Russell, *Volcanoes of North America;* Geikie, *Ancient Volcanoes of Great Britain;* Judd, *Volcanoes;* Dodge, *Volcanoes*, J. of School Geog., 1897.

Experimental Course in Astronomy, Ninth and Tenth Grades: (GEORGE W. MYERS.) Continued from COURSE OF STUDY for March.

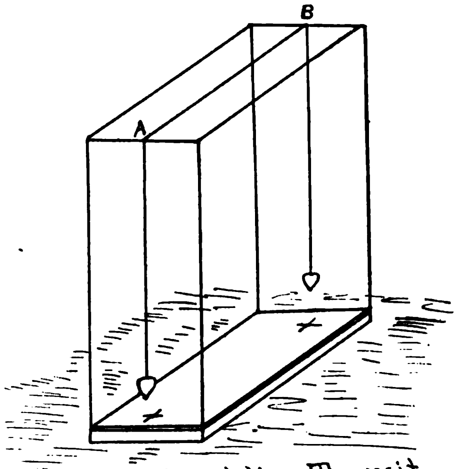
EXPERIMENT No. 15. To establish a meridian.

(a) Without a time-piece.

(1) By the Polestar and plumb-line.

Set four vertical poles, or pieces of gas-pipe, 6 or 7 feet tall, in the ground at the four corners of a rectangle 5 x 10 feet, the long dimension being placed approximately (by guess) north and south. Connect the tops of the poles with horizontal cross-pieces to hold them in place. Attach a heavy weight (a brick) to each end of a smooth cord, 22 to 24 feet long, and hang it over the middle of the middle points of the north and south end cross-pieces. Allow the ends of the cord to hang freely, the weights held at about the same distances from the ground, and low enough to allow them to swing freely in buckets of water if the wind is strong.

By glancing at a star atlas, it will be seen that Delta Cassiopeia, Zeta Ursa Majoris (the star at the bend of the handle of the Great Dipper), and Polaris (the Polestar), are all on the same celestial meridian, or hour circle. They are therefore in the meridian of any place at the same instant. If, then, an observer station himself behind (south of) the south plumb-line, and look northward at about the time either of the two first mentioned stars comes to the meridian, he may shift the plumb-line nearest him toward the right or left until this star and Polaris are just covered by the plumb-lines, at which instant the plumb-lines will be in the meridian. If the cross-pieces are now notched a little just where the cord lies, the plumb-line will always indicate the meridian by placing it in these notches.



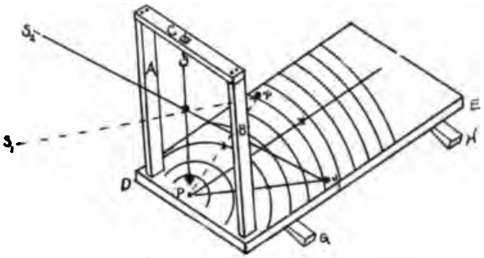
Plumb-line Transit

Fig. 15

If plumb-bobs are used, the points just beneath them may be transferred to the ground, or to a stone placed in proper position, and the meridian may then be identified at will.

(2) By observing the sun.

Suspend a plumb-line near the middle of a board on which a number of concentric circular bands, alternating black and white (black lines between white spaces will do), struck with the point *P* of the board just beneath the plumb-bob as center, and provide the plumb-line with a sliding bead. (See Exp. No. 20.)



Plumbline Gnomon

Fig. 16

Note the point (x) of any circle where the shadow of the bead crosses it in the morning, and the point (y) where the same circle is crossed by the shadow in the afternoon. Connect these two points with the center of the circle and bisect the angle between the connecting lines. The bisector is in the meridian (if the board *DE* has not been moved meanwhile), and the line may be readily transferred to and fixed upon the ground.

(b) With a time-piece.

Obtain the correction of the time-piece by methods to be given later, and compute the time when the star should be on the meridian. If the time-piece is rated to keep sidereal time, the right ascension of the star, obtained from the *American Ephemeris*, will be the correct time when the star crosses the meridian above the pole (upper culmination), and this right ascension increased by 12 hours will be the correct time of lower culmination.

If the time-piece keeps mean solar time, the sidereal time can be found approximately by adding to mean solar time 2 hours for each month, and 4 minutes for each odd day, since the Vernal Equinox (March 21st). The table at the end of the *American Ephemeris* will make possible a more accurate determination of the sidereal from the mean solar time, and vice versa. After the sidereal time has been determined, it may be compared with the right ascension as before. The difference is the correction of the time-piece, if it is slow, or if fast.

EXPERIMENT NO. 16. To determine the latitude approximately.

(a) Set a stake vertically on a level surface, and measure the length of the shortest shadow during the day. Also measure the height of the stake. Draw a right angle on paper, and to any convenient scale plat these measured lengths on its sides. Connect the ends of the platted lengths and measure with a protractor the angle which is adjacent the side representing the length of the shadow. This angle will be the slant of the rays to the horizon. Take the declination of the sun for the date from the *American Ephemeris*, or from *The Old Farmers' Almanac* (Wm. Ware, Boston, price 10c.), add this to the measured slant and subtract the sum from 90°, and the difference will be the latitude.

(b) With the aid of the plumb-line gnomon (Fig. 16), described above (Experiment No. 15, (a), (2), the length of the radius of the circle on which the shadow of the bead falls when it is nearest the bob and the height of the bead above the surface of the board may be used as the shadow length and height of stake above.

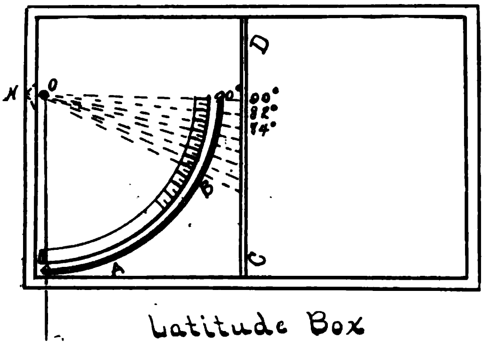


Fig. 17

(c) Perforate the middle of one end of a pasteboard box with a needle-hole, *H*, near the bottom. Graduate into degrees a quadrant described with a point, *O*, on the bottom of the box, as near the needle-hole as possible, as a center. A strip, *AB*, of cardboard may be bent around the arc, and pasted or glued to the bottom of the box. Or, a straight strip, *CD*, may be fastened across the box, and the graduations may be transferred to it then, as shown at 90°, 82°, etc., until *C* is reached, when they may be transferred to. the lower edge of the box. (This idea is due to Professor Todd, of Amherst College.)

To use the box. Place it in position with its bottom against a vertical north and south wall, or more accurately, within the meridian plane, determined as in the last experiment, so that the plumb-line, *OP*, hangs just above the zero graduation mark. The image of the hole, *H*, cast by the sun at noon may then be seen on *AB* or *CD*, and the corresponding reading be made. This gives the zenith distance of the sun directly, and with the almanac declination of the sun for the date, the latitude will be found from—

Zenith distance *minus* the declination, when the sun is south of the equinoctial (from September 22d to March 21st) and zenith distance *plus* the declination when the sun is in north declination (from March 21st to September 22d.)

EXPERIMENT NO. 17. To construct a crude transit instrument.

(a) The vertical north and south wall of a building, or of two stakes set vertically in a line parallel to such a wall, may be used as a crude transit instrument by placing the eye against the north edge of the wall or north of the north stake, the observer looking southward, and noting the time when a star, or other heavenly body, passes behind the wall, or across the plane of the two stakes.

(b) A very good crude transit instrument is obtained by setting four vertical posts, or gaspipes, in the ground as suggested by the cut of Experiment No. 15, (a), (1). The posts should be six to eight feet high, the long side of the rectangle inclosed by the feet of the uprights, being north and south. Suspending a continuous plumb-line, carrying a bob at both ends (the bobs may be allowed to swing in vessels of water to avoid the effects of the wind), the vertical portions of the string, or either vertical end segment with the horizontal middle segment will fix the meridian plane after it has once been fixed by star observations as suggested in Experiment No. 15, and the east and west top cross-pieces have been notched at *A* and *B*. North stars may be observed by placing the eye south of the south vertical end and looking northward, and south stars by standing north of the north end and looking southward.

(c) By the home-made apparatus explained on page 23 of Miss Byrd's *Laboratory Manual in Astronomy* (Ginn & Co.), a book which is highly recommended to all interested in elementary practical astronomy.

EXPERIMENT NO. 18. Construct a wooden altazimuth instrument.

With a radius of two feet describe on and cut out of a ⅞-inch oak board an arc, *ADB*, and graduate it to any desired accuracy. With inch oak stuff frame together a quadrant, as

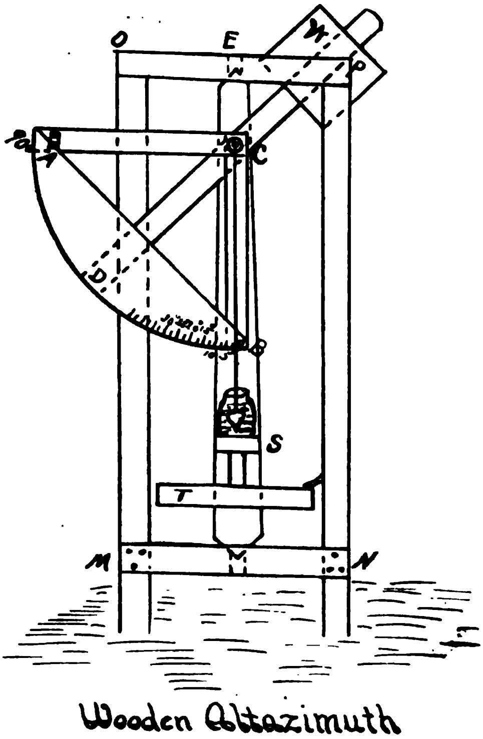


Fig. 18

ACBD in the cut. Bolt it at C to an upright, *EF*, tapered at either end to fit conical holes, in two pieces, *OP* and *MN*, which are nailed to two posts set firmly in the ground. Leave the bearing loose enough to allow the quadrant to move freely about *C*. The stick, *DC*, may be allowed to extend beyond *C* far enough to carry a weight, *N*, for a counterpoise; otherwise the bearing, *C*, should be adjustable. Let the bolt at *C* be provided with a long, pointed head and fit a notched sight at *A*. Attach a plumb-line to the head, *C*, and allow it to hang freely in a vessel of water (battery cell or tin cup) supported by a stand, *S*, on the post, *EF*. Placing a carpenter's level on the top of *AC*, hold the quadrant so that the bubble will play, and start the graduations with the point which then falls just beneath the line near *B*, the graduations rising to 90° at *A*.

If desired, a circular board, graduated and fixed horizontally to the post, *EF*, just below the stand, may be added, from which, by the aid of a pointer fixed to the post, *OM* or *PN*, horizontal angles, or azimuths, may be read. All measurements of altitude and azimuth which are made with a universal instrument may be roughly made by this apparatus, if the objects used are bright.

EXPERIMENT NO. 19. To make a wooden quadrant for hand use. Join two ¾-inch surfaced boards together, reinforcing them by cleats, if necessary, and cut from them a quadrant of radius 18 inches, as suggested by the accompanying figure. Graduate it, and provide it with a plumb-line, as shown. By means of a handle attached as represented in the edge view, altitudes of naked-eye objects may be measured by hand, much after the fashion of the simplest forms of the sextant. The sight-line, *SC*, is determined by a notched sight at *S*, and a pin or nail at *C*. The graduation lying just beneath the cord at *D*, when the sight-line is directed to the object, furnishes the angular elevation of the object above the horizon. The reading may be very much facilitated by an assistant. Altitudes of the moon, of the brighter stars, and with the use of colored glasses to protect the eyes, of the sun may be measured with rather surprising accuracy with this device, after a little practice.

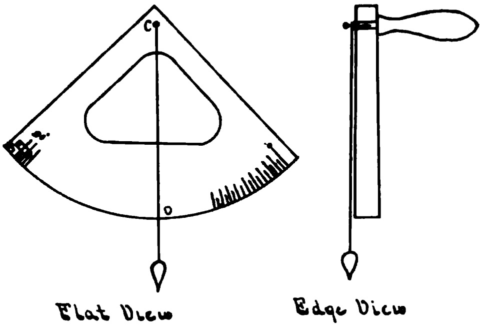


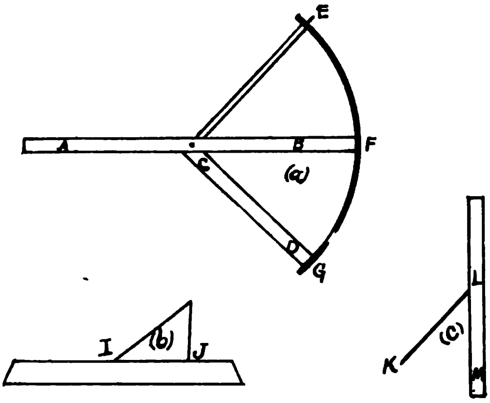
Fig. 19

EXPERIMENT NO. 20. Construct a Tycho's quadrant. If the quadrant, *ACBD*, of the last experiment be made smaller and lighter, and a pin be inserted at *C* to serve for a handle, the quadrant may be supported by hand. In this case an assistant observer will note the reading which falls under the plumb-line.

EXPERIMENT NO. 21. Construct a plumb-line gnomon. Surface a board (*DE*, Fig. 16), 2 feet by 3 feet, and fix two uprights, *A* and *B*, vertically upon it. Tie the uprights with a cross-piece, *C*, at the top, and suspend a plumb-line, provided with a sliding bead, from the middle of *C*. Varnish or paint the surface, and with thin wedges at *G* and *H* level the board carefully with a spirit level and mark the point just beneath the lower tip of the bob. Hereafter the board may be leveled by sliding the wedges in and out until the bob hangs just over the designated point. With this point as a center, describe a series of concentric circles with radii varying by one inch (or by ½ inch). By noting the instant when the forenoon shadow of the bead crosses (or touches) any circumferences and the instant when the afternoon shadow crosses the same circumference, the time of apparent noon is given by taking one-half the sum (the mean) of the times of the two suggested instants.

To find the meridian, see Experiment No. 15, (a), (2).

Experiment No. 22. Construct a horizontal sun-dial. Apparatus for graduating a horizontal dial. Cut out and surface two wooden circles of 12 inches diameter and fit the half of one to the other at an angle of 48° (the colatitude of Chicago). Erect at the common center of the circles a wooden or iron rod, making an angle of 42° (the latitude) to the whole circle, and on the side opposite to the one on which the half-circle is fitted, as indicated in the figure. Cut the rod off to a length equal to the radius of the circles. Fasten one end of a flexible strip of copper, *EFG*, the length of which equals a quadrant of a circumference whose radius equals the radius of a circle, to the top end, *E*, of the rod, leaving it free to turn.



(a) = Graduating Apparatus,
(b) = Horizontal Dial,
(c) = Vertical Dial,

Fig. 20

Graduate the circle, *CD*, whose plane is perpendicular to the rod, *CE*, 5° or 10°; then by putting the end, *G*, of the copper strip, *EFG* (free to turn about *E*), at the successive points of graduation of the circle, *CD*, corresponding points may be transferred to the circumference of the full circle, *AB*, which, being connected with bottom of the rod, will indicate the consecutive positions of the shadow of the rod for twenty and forty minute intervals of time. This completes the apparatus for graduating the dial.

To make the dial:

(a) Insert a smooth stick in a surfaced board at an angle with the surface equal to the latitude of the place. Describe about the foot of the stick a circle of radius of six inches and transfer to this circle, from the point directly under the end of the stick, the graduations of the full circle of the graduating apparatus described above.

(b) Instead of the inclined stick the edge of a triangle may be used, whose angle, *HIJ*, is the latitude.

Experiment No. 23. To make and graduate a vertical dial.

On the south side of a vertical surface attach a triangle (or a rod, *KL*, foregoing cut) so that its plane shall be perpendicular to the vertical surface, *LM*, and its hypotenuse, *KL*, shall make an angle equal to the co-latitude (90°-latitude) with this surface.

To graduate the circle *L M*, an apparatus like the one for the horizontal dial may be used, save that here the angle *E C F* must be the *co-latitude* (90° latitude), and the angle *F C G* must here be equal to the *latitude* of the place.

Experiment No. 24. To construct a negative, or Huyghenian, eye-piece.

Procure two plano-convex lenses, one of ¾-inch diameter and 2 inches focal length, and the other of ¾-inch diameter and ¾-inch focal length. Roll up around a cylindrical stick, ⅝-inch diameter, heavy manila paper, using 6 or 7 ply, a cylindrical tube. The successive layers of paper may be stuck with library paste.

When the cylinder dries, cut off a piece 1⅜ inches, square the ends, and fit the lenses as suggested by the figure. Before attaching the lenses to the tube, cut from the center of two circular pieces of pasteboard a smooth hole ¼ inch in diameter, as at *B* and *D*. After pasting the edges of the first disk, stick it in the tube ¾ inch from one end, *D*, where the 2-inch focal lens is to be attached. The edges of the lenses may be stuck to the paper by means of gold-size. Complete the eye-piece as suggested

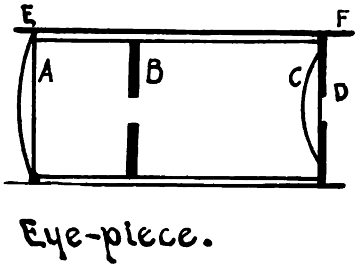


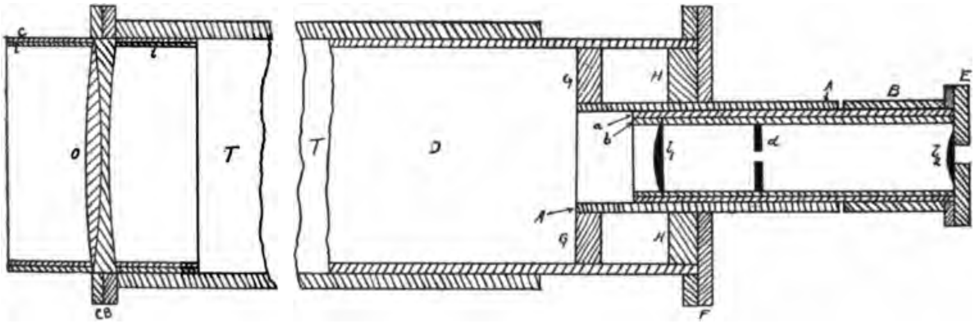
Fig. 21

by the cut. The completed eye-piece should be covered with a layer of tissue paper, the edges of which are allowed to extend beyond the ends of the tube, as shown at *E* and *F*. The ends should then be stuck down around the edges of the lens, *A*, and of the pasteboard disk, *DF*.

(N. B.—This exercise is due to Dr. George Pyburn, and was published in *Popular Science Monthly*, Vol. XXIV, No. 1. The article is also reproduced as *Appendix A* in Miss Byrd's *Laboratory Manual.*)

Experiment No. 25. To make a telescope. Obtain a 1½-inch x 30-inch achromatic object-glass, *O*, and roll up tubes of manila paper, stick with glue or library paste, and make a cell (as *c*) around it. Then roll up a tube, *T*, 30 inches long, and a draw-tube, such as D, some 15 inches long. Provide the back end of the draw-tube with cardboard flange, *F*, and roll up smaller tubes to fit, as indicated in the figure. The collars, *G G* and *H H*, may be made by rolling narrow strips of manila paper about the tube, *A*, until they just fit inside *D*. A strip of broadcloth, just wide enough to wrap once around the outside of *a*, should be glued to the outer surface of *a* to insure smooth sliding of *a* within *A*. The eye-piece was fully explained in Experiment No. 24.

(See *Appendix A* of Miss Byrd's *Laboratory Manual.*)



O.	Objective.	*B*.	Covering for eye-piece.
C.	Cell and cap.	*C B*.	Flange of Pasteboard.
i.	Inner tube to hold cell.	*F*.	Flange.
T.	Main tube.	*l1* and *l2*.	Eye-piece lenses.
D.	Drawtube.	*G* and *H*.	Shoulders.
a.	Eye-piece adapter.	*d*.	Perforated diaphragm.

Fig. 22

Eleventh and Twelfth Grades

Latin, Eleventh Grade: (ALLEN W. GOULD.) In April the students will read the first sixteen chapters of the *Oration for Milo*, to show the condition of the Roman Republic just before Caesar seized the government. The attempt will also be made to help the pupils to see what the courts and legal procedure evolved by Rome meant to the whole world, and how this gift of the Roman race remained after government by reason and persuasion had failed.

General Geology, Eleventh Grade: (WALLACE W. ATWOOD.) The regions west of the Great Plains, including the plateaux and mountain ranges, remain to be considered. Over broad areas in this western country geological data have not been collected, and yet enough is known to make a classroom study of these regions very instructive.

Following Mr. Powell's subdivisions into physiographic regions, given in the *National Geographic Monographs*, the Stony Mountains can be differentiated from the Park Mountains of Colorado, the Columbian Plateaux from the Colorado Plateaux, and the open basin region south of the Colorado Plateaux from the closed basin region of Nevada and Utah.

From the thin scattering of known outcrops it is clear that much of this country was under water in relatively recent geological time. The mountains have the rough, rugged forms of youth, cañons are the dominating form of valley, the fresh lava flows scarcely differing in appearance from those poured out but a few years ago in Hawaii, the cinder cones and the geysers of the Yellowstone, all indicate the youth of this portion of our country.

Structurally, a great variety exists. Along the line of the Great Northern Railway the Stony Mountains are made of gently folded strata, lifted five to six thousand feet above the sea and somewhat deeply eroded. In the mountain valleys of this region glaciers exist to-day, but in pleistocene time these glaciers extended far down the valleys beyond their present limit, smoothing off the bordering hills, gouging out the bottoms, and leaving great banks of débris. The Park Mountains have been somewhat sharply folded, and erosion has gone on so far that the crystalline cores have been exposed at many places.

The Grand Cañon region has been faulted, but the layers are yet in approximately horizontal positions.

In the Great Basin region the strata have been faulted and upturned until the area may be thought of as a region of blocks so pitched as to make mountains. At many places in this western country volcanic outbursts have occurred; dykes, cinder cones, and lava flows are common in the southern portion; Mount Taylor of New Mexico and the San Francisco Mountains of Arizona are volcanic peaks rising many thousands of feet above the general plateau level, but nowhere in the West has vulcanism played so great a part in the recent history as in the region of the Columbian Plateaux.

West of the great plateaux are the Cascades, Sierra Nevadas, and Coast Ranges. Little is known of the details of their histories. They are all relatively young mountains, have suffered much from volcanic activity during growth, and are at many places sharply folded.

Ore deposits in this western country may be studied if time allows.

Art Expression: Chalk-modeling of land forms. Water-color paintings of scenes in the regions studied.

References: *National Geographic Monographs;* Davis, *Physical Geography;* Dutton, *Tertiary History of the Grand Cañon Region;* Emmons, *Rocky Mountain Geological Guide;* Russell, *Lakes of North America;* Gilbert, *Henry and Uinta Mountains*, and *Lake Bonneville.*

Chemistry, Eleventh and Twelfth Grades: (ALICE P. NORTON.) The spring quarter will be given to the study of minerals. The fall work in geology embraced a discussion of rocks and soils, and the physical causes of their formation and disintegration. The chemical side of these changes will now be emphasized. The laws of chemical change and combination, and the relation of chemical energy to heat, will be brought out more clearly than heretofore. An increasing number of chemical problems, involving mathematics, will present themselves. The determination of specific gravity and specific heat, of the combining weights of different substances, of the effects of temperature and pressure upon the volume of gases, will afford opportunity for much mathematical work.

The first group of minerals studied will be the carbonates. They will be considered under the following heads:

I. Occurrence in nature.
II. Recognition.
1. Hardness.
2. Color.
3. Luster.
4. Specific gravity.
5. Solubility.
6. Blow-pipe reactions.
7. Crystalline forms.
III. Study of elements combined.

French, Eleventh and Twelfth Grades: (LORLEY ADA ASHLÉMAN.) During the past month the pupils were upon one occasion allowed thirty minutes to write from memory what they recalled from the scene between Maugendre and Louveau. Two of the papers are printed below.

The written work gave rise to many interesting discussions, particularly on verbs and negatives, the use of the imperfect and past definite tenses, reflective verbs, mode used after *si*, etc.

I. Avec les verbes *cesser*, *oser*, *pouvoir*, *savoir*, on supprime *pas* et *point*, surtout quand ilssont suivis d'un infinitif.

"N'osez-vous entreprendre une cause si belle?"—*Delavigne.*

II. On supprime *pas* et *point* devant un subjonctif employé négativement, quand le premier verbe précède *personne*, *nul*, *aucun rien*, *nullement guère*, et *peu.*

"Il y a peu de plaisirs qui ne soient achetés trop cher."

III. Après le deuxième verbe d'une interrogation quand la phrase est moins une interrogation qu'un moyen de communiquer quelque chose avec emphase.

"Ne crains-tu pas que ta perte n'entraîne une autre perte plus cruelle?"

IV. Après les verbes *craindre*, *appréhendre*, *avoir peur*, *trembler*, *il est dangereux*, et en général après les mots qui expriment la crainte, on met *ne* aussi dans la proposition subordonnée.

"Je dois craindre. Je crains qu'un songe ne m'abuse."—*Racine.*

V. Après *à moins que* on emploie *ne.*

"Je sortirai cueillir des violettes à moins que vous ne me défendiez."

VI. On emploie *ne* après *si* employé dans le sens de *à moins que* par une raison d'élégance.

"Prince, si tu n'as des vertus, on te rendra des hommages, et on te haïra."—*Thomas.*

VII. Après les verbes *désespérer*, *douter*, *disconvenir*, et *nier*, employés négativement et qu'ils précèdent *que.*

"On ne peut nier que cette vie n'ait des désagréments."

VIII. On supprime *pas* après *plus*, *moins*, *autre*, *autrement*, quand ces mots précèdent *que* devant un indicatif.

"Je n'ai d'autre ambition que de voir le bonheur des enfants."

IX. On emploie *ne* précédé de la conjonction *que* avec l'indicatif pour exprimer un souhait.

"Oh que ne suis-je proche du trône extérieur de Dieu, la nature."

X. Après *il s'en faut*, accompagné de la négation ou de l'adverbe *peu*, on emploie *ne* dans la phrase subordonnée.

"Peu s'en fallut que nous touchassions sur un rocher."—*Bernardin de St. Pierre.*

XI. Après *depuis que*, *il y a—que*, on retranche *pas* et *point*, si le verbe qui suit est à un temps composé.

"Les choses sont bien changées en France depuis que je ne vous ai vu."

La Jeunesse de Victor

Quand Victor avait sept ans la Mère Louveau l'envoya á l'école avec Clara. Victor portait les livres et les paniers, et il se battait pour défendre le goûter des appétits des morvandiaux (garçons). Il travaillait aussi très dur, et il apprenait plus dans un hiver que les autres écolièrs.

It était adroit et léger, et il grimpait sur les arbes pour attacher les cordes qui servaient à les abattre. Il grimpait très haut, et Clara s'en effrayait, mais Victor, comme tout autre garçon, se balançait tout exprès pour la taquiner.

Il y avait un charpentier, dans la forêt, qui vivait seul, et personne ne savait rien à son égard. Il disait au curé, qu'il était veuf. Il avait une grande affection pour Victor et lui disait, "Vous me rapellez mon fils que j'ai perdu il y a bien longtemps. Ce charpentier voulait adopter Victor, et l'envoyer au collège, mais François refusa cet offre.

Quand Victor avait douze ans la Mère Louveau tombait malade, et il n'y avait plus d'argent dans la maison. François perdit la tête et confondait la soupe et la médecine. Il laissa Victor à la maison pour soigner la malade. Il vendait son bois tout seul. En route pour Paris il trouva un acheteur malhonnête, qui le coula, et il retourna chez lui et raconta à sa femme l'histoire de la vente. Elle ne gronda pas, mais elle était très triste.

La Belle Nivernaise avait besoine d'être réparer, mais il n'y avait pas d'argent pour le faire. Louveau se décida d'aller à Clamecy. C'était très dur pour la famille de garder Victor, parcequ'il avait douze ans, il mangeait beaucoup, et il coûtait cher, mais ou ne voulait pas encore s'en séparer.

MARGARET NORTON.

Totor

Totor avait maintenant douze ans. Il mangeait comme un homme. Il pouvait manœuvre la gaffe quand l'Equipage se cassait quelque chose. Maugendre aurait beaucoup aimer le prendre. Il disait qu'il avait peur de mourir seul. Parce que sa femme était morte. Et il n'avait pas d'enfants. Si le père Louveau lui donnait Totor, Maugendre promit de l'envoyer à la ville, et au collège.

Et ça aurait été une grande chance pour Totor. Le pauvre Maugendre l'aimait beaucoup.

Les deux hommes étaient dans la cabine de la Belle Nivernaise. Ils voyaient Totor et Mimile dans leur lits. On pouvait entendre la rivière clapoter le long du bordage, et de temps en temps on pouvait entendre le sifflet des chemins de fer déchirant la nuit.

La mère Louveau éclata en sanglots; "Dieu ait pitié de nous! François je le garde!"

RUPERT MASON.

Mathematics, Eleventh and Twelfth Grades: (GEORGE W. MYERS.) Review of Algebra, Geometry, and Trigonometry.

These subjects will be reviewed by solving the following and similar problems of Mechanics:

Study carefully the text of p. 204 and column 1 to 205, together with Figs. 1 to 3 of the November COURSE OF STUDY.

1. P and Q are two fixed points in a horizontal line; at P a string of length of b is fastened, the other end being attached to a smooth ring at R, through which another string passes, with one end fastened at Q. Determine the position of R for equilibrium.

Suggestion: Call $PQ=a$, $PR=b$, $RPQ=x$, $RQP=y$, and the tension in the string, $PR,=T$. Then inquire what lines have given lengths; what forces given magnitudes, and what forces

are unknown, and what unknown lines or angles would fix the position of *R*?

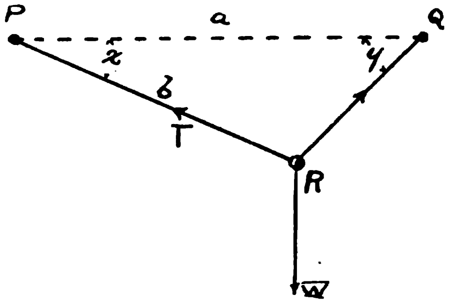


Fig. 1

Now show that $W \cos y = T \cos x$ and $W \sin y + T \sin x = W$ and eliminate *T*. This gives $\cos x = \sin (x+y)$, or $2x+y=90°$, and by Trig. $\frac{\sin(x+y)}{\sin y} = \frac{a}{b}$.

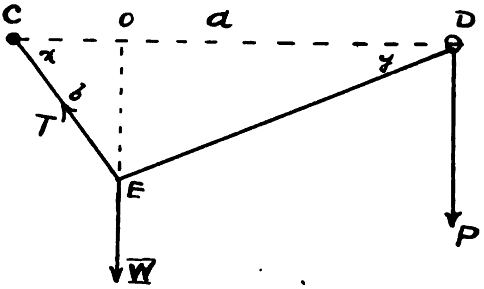


Fig. 2

2. One end of a string is attached to a fixed point, *C*, a weight, *W*, is tied to it at E; then it passes through a smooth fixed ring at *D* and terminates in the given load, *P*. Putting $x = ECD$ and $y = EDC$, find the values of x and y for equilibrium.

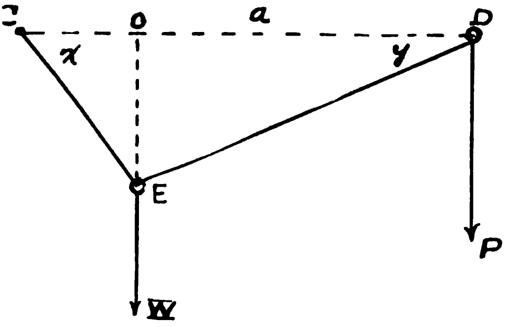


Fig. 3

3. If *W* is attached to the string at *E* by means of a smooth ring, find the value of x for equilibrium.

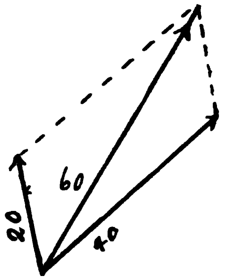


Fig. 4

4. Two forces of 20 and 40 act on a particle at an angle of 60°; find the resultant.

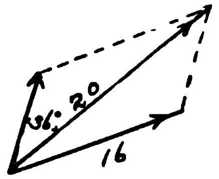


Fig. 5

5. The resultant of two forces is 20 lbs.; one of the forces is 16 lbs. and the other is inclined to the resultant at an angle of 36°. Find it, and also the angle between the two forces.

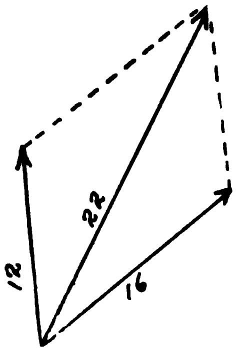


Fig. 6

6. A point is kept at rest by forces of 12, 16, and 22 lbs. Find the angle between the forces 12 and 16.

7. A particle of weight, *W*, is sustained on a smooth inclined plane by three forces, each equal to $W/3$; one acts vertically upward, one horizontally, and a third along the plane. Find the inclination, x, of the plane.

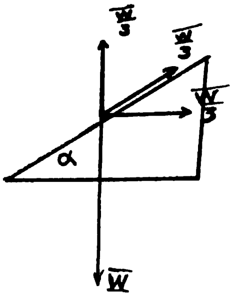


Fig. 7

8. Solve the exercises given on p. 206 of the November COURSE OF STUDY.

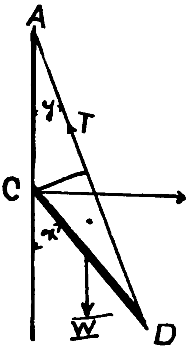


Fig. 8

9. A heavy beam, *CD*, rests in a vertical plane with one end, *C*, against a smooth vertical wall, and the other end, *D*, is fastened by a string, *AD*, of given length to a point, *A*, in the wall. It is required to determine the pressure against the wall, the tension of the string, and the position of the beam and the string.

10. The weight of the derrick equals 300 pounds, and the weight of the box it stands on is 50 pounds. The derrick stands on the center of the box, and the conditions are as shown in the figure. Will the box tip over?

Using the symbols and six fundamental relations given on p. 487, January COURSE OF STUDY, prove the following fundamental equations of Trigonometry:

1. $S^2+C^2=S^2C^2$.
2. $\frac{s}{1\pm c}=\frac{1\mp c}{s}$.
3. $\frac{c}{1\pm s}=\frac{1\pm s}{c}$.
4. $\frac{S\pm 1}{t}=\frac{t}{S\mp 1}$.

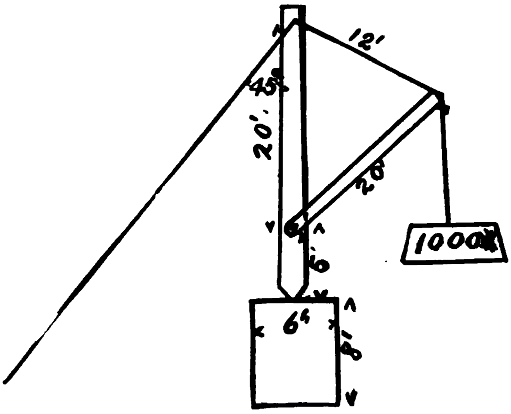


Fig. 9

5. $t+T=SC$.
6. Given $s=\frac{1}{2}$; find c, t, T, S, C, and v.
7. Given $c=-\frac{3}{5}$; find all the remaining numbers.
8. Given $t=\frac{3}{8}$; find all the remaining numbers.
9. Given $S=\frac{4}{5}$; find all the remaining numbers.
10. Given $s+c=1.2$; find s.
11. Prove $t^2-s^2=t^2s^2$.

References: Murray, *Plane Trigonometry*; Wells' *Essentials of Trigonometry*; Wells' *New Plane and Spherical Trigonometry*; any Elementary Mechanics and Civil and Mechanical Engineers' Pocketbooks.

History, Twelfth Grade: (EMILY J. RICE.) Subject: American History. The Revolution of 1800.

We shall first compare the economic condition of the United States one hundred years ago with that of the present time, and then trace the history of the cotton industry. See a monograph on the cotton industry by Hammond.

Each student will read Morse's *Life of Thomas Jefferson* in the *Statesmen Series*, and make this biography a center for the study of the political events of the period.

The literature for this month is Ruskin's *Of King's Treasuries*.

References: McMaster, *History of the People of the United States*, v. 2; Schouler, *History of the United States*, v. 2; Blaine, *Twenty Years in Congress*, v. 1 (for the

Louisiana Purchase); Sheldon, *American History* (for a description of New Orleans and for the Clarke, expedition); Barrow's *Oregon*. For descriptions of the personality of Jefferson, Napoleon, and Toussaint L'Ouverture, see Henry Adams' *History of the United States*, v. 1 and 2; *Memoirs and Letters of Dolly Madison*, and Goodwin's *Dolly Madison;* Coues, *The Lewis and Clarke Expedition;* Lives of Jefferson, Madison, and Gallatin in the *Statesmen Series;* Goodrich, *Recollections of a Lifetime; A Girl's Life Eighty Years Ago*, Scribner's Magazine (May, 1887). Fiction: Dickens, *Tale of Two Cities;* Hale, *Man without a Country;* Martineau, *Peasant and Prince.*

German, Twelfth Grade: (DR. SIEGFRIED BENIGNUS.) The correlation of German with the history of the nineteenth century is continued in the way shown in the former numbers of the COURSE OF STUDY. The pupils will study the expedition against Mexico from 1861 to 1867, undertaken by France, England, and Spain, and continued from 1862 by Napoleon III. only, in order to check the influence of the Anglo-Germanic race and to strengthen the Romanic race by establishing a monarchy under the control of France. A sympathetic attention will be given to the drama of the unhappy Archduke Ferdinand Maximilian, allured to Mexico through the promises of Napoleon, and shot by the order of the president, Juarez, of Mexico.

In literature, the poets of the Earlier Romanticists will be completed: Heinrich von Kleist, Zacharias Werner, Adolf Müllner, Ernst von Houwald, Amadeus Hoffmann.

Following this, the poets and prose-writers of the Napoleonic wars, who contributed through their writings and valor to the liberation of Germany from Napoleon's yoke, will be considered: Max von Schenkendorf, Theodor Körner, Ernst Moritz Arndt, Friedrich Rückert, especially through his *Sonnets in Armor* (*Geharnischte Sonette*), Johann Gottlieb Fichte, through his *Reden an die Deutsche Nation*, Friedrich Schleiermacher, through his *Reden über die Religion*, Friedrich Ludwig Jahn, through his *Deutsches Volkstum.*

For memorizing, the following poem by Theodor Körner has been selected. It expresses in a most striking manner the veneration of the combatants of liberation toward their ideal woman, the Queen Louise of Prussia.

Vor Rauchs Büste der Königin Louise

Du schläfst so sanft!--Die stillen Züge hauchen
Noch Deines Lebens schöne Träume wieder;
Der Schlummer nur senkt seine Flügel nieder,
Und heil'ger Friede schliesst die klaren Augen.
So schlumm're fort, bis Deines Volkes Brüder,
Wenn Flammenzeichen von den Bergen rauchen,
Mit Gott versöhnt die rost'gen Schwerter brauchen,
Das Leben opfernd für die höchsten Güter.
Tief führt der Herr durch Nacht und durch Verderben;
So sollen wir im Kampf das Heil erwerben,
Dass uns're Enkel freie Männer sterben.
Kommt dann der Tag der Freiheit und der Rache:
Dann ruft Dein Volk; dann, *Deutsche Frau!* erwache,
Ein guter Engel für die gute Sache!

Theodor Körner, 1791–1813;
"Leyer und Schwert."

Music: (MISS GOODRICH.) *The First Grass, In April, Spring Song*, p. 83, *Spring Song*, p. 104, *Stay so, Sweet Season, April Showers, April, Come, Happy Spring, The Coming of Spring, The Daisy, Easter Ode, Pleasures of the Country*, Modern Music Series, Third Book; *Earth's Resurrection, Spring Joys*, Songs of Life and Nature.

Morning Exercises

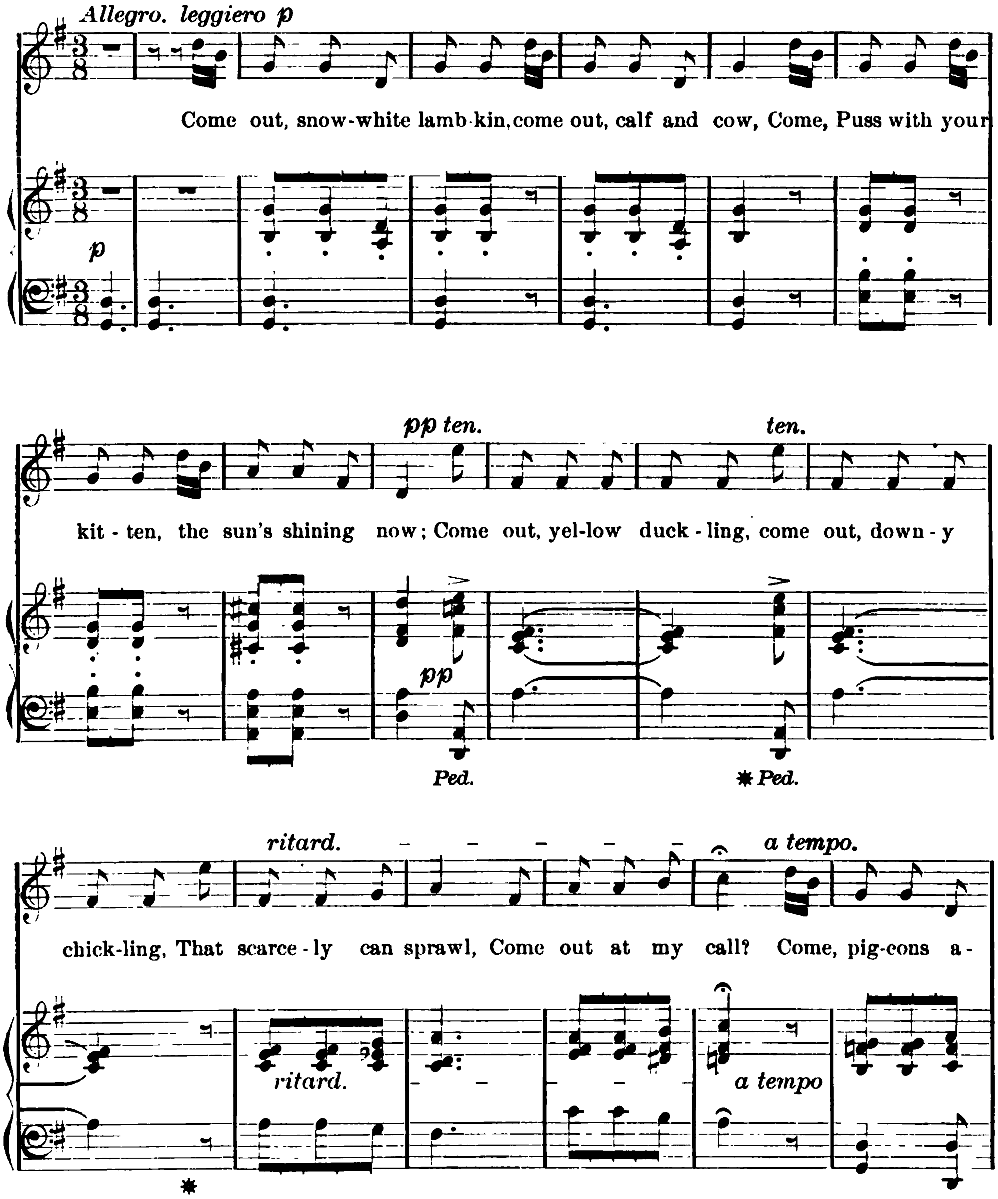
APRIL	SUBJECT	LEADER
2.	Some Interesting Animals	Miss Howell.
3.	Nuremberg Toys	Miss Payne.
4.	Textiles	Miss Mitchell.
5.	Current Events	Miss Rice.
9.	Pottery	Miss Hollister.
10.	A Greek Festival	Miss Van Hoesen.
11.	Geography of Current Events	Miss Baber.
12.	Science Observations	Mr. Jackman.
16.	Evolution of Witchcraft	Miss Crawford.
17.	The Moon	Mr. George Myers.
18.	Recent Scientific Events	Mr. Atwood.
19.	Lexington and Concord	Mr. Bass.
23.	Froebel's Birthday	Miss Allen.
24.	Roman Customs	Mr. Flint.
25.	News and Newspapers	Mr. Gould.
26.	Current Events	Mrs. Thomsen.
30.	Venice	Mrs. Flint.

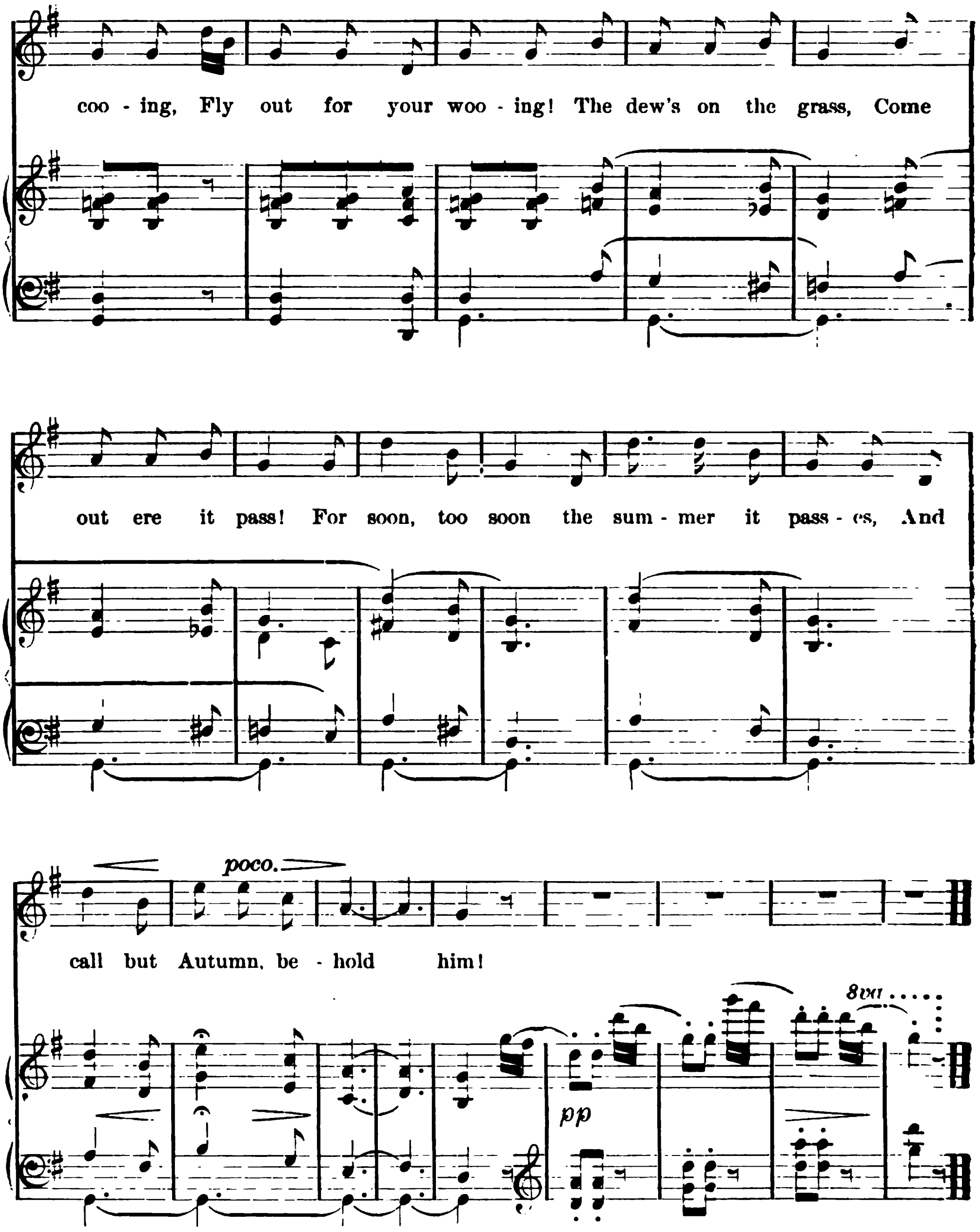
Historical Events and Birthdays

April	1	Bismarck	1813
"	2	Thomas Jefferson	1743
"	2	Hans Christian Andersen	1805
"	3	Washington Irving	1783
"	6 and 7	Battle of Shiloh	1862
"	7	William Wordsworth	1770
"	12	Henry Clay	1777
"	14	Lincoln's Assassination	1865
"	19	Concord and Lexington	1775
"	21	Froebel	1782
"	23	Shakespeare	1564
"	25	First Permanent Newspaper in America Established	1756
"	26	Alice Cary	1820
"	27	Herbert Spencer	1820
"	27	U. S. Grant	1822
"	28	James Monroe	1758
"	30	Louisiana Purchase	1803

Farmyard Song

GRIEG.


Allegro. leggiero p
Come out, snow-white lamb-kin, come out, calf and cow, Come, Puss with your
p
pp ten.
ten.
kit-ten, the sun's shining now; Come out, yel-low duck-ling, come out, down-y
pp
Ped.
✱ Ped.
ritard.
a tempo.
chick-ling, That scarce-ly can sprawl, Come out at my call? Come, pig-eons a-
ritard.
a tempo
✱


coo - ing, Fly out for your woo - ing! The dew's on the grass, Come
out ere it pass! For soon, too soon the sum - mer it pass - es, And
poco.
call but Autumn, be - hold him!
8va
pp

Reading List for April

Chicago

Ackerman	*Early Illinois Railroads.* (In *Fergus Historical Series*, No. 23.)
Andreas	*History of Chicago*, 3 v.
Arnold and Scammon	*W. B. Ogden, and Early Days in Chicago.* (In *Fergus Historical Series*, No. 17.)
Arnold and Sheahan	*Lincoln and Douglas.* (In *Fergus Historical Series*, No. 15.)
Arnold and others	*Chicago Bar Association Lectures.* (In *Fergus Historical Series*, v. 22.)
Balestier	*Annals of Chicago.* (In *Fergus Historical Series*, No. 1.)
Bastin	*Some Geology of Chicago and Vicinity.* (*Harper*, v. 81, pp. 427–436.)
Blanchard	*Chicago.* (See his *Discovery and Conquest of the Northwest*, pp. 326–473.)
Beckwith	*Illinois and Indiana Indians.* (In *Fergus Historical Series*, No. 27.)
Brown	*Present and Future Prospects of Chicago*, 1846. (In *Fergus Historical Series*, No. 9.)
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VOL. I. MAY, 1901. No. 9.

THE COURSE OF STUDY

A PUBLICATION FOR TEACHERS AND PARENTS
ISSUED MONTHLY—TEN NUMBERS A YEAR.

Suggestions as to the Study of Psychology

Francis W. Parker

I.

The mastery of a science depends upon a thorough study of the elementary steps that lead up to the laws and principles of that science. *The elementary study of a science demands a long, thorough, and direct examination, by observation, experiment, and investigation of the things intrinsic to that science.* For this indispensable work there can be no substitute. The common failure to comprehend a science is due to lack of preliminary work.

In the first steps a science text-book can be used pedagogically only as a guide to economical investigation, for the statements and discussions of even the best text-book outrun the experience of students, making personal verification impossible, thus confusing and losing the student in a multiplicity of incomprehensible statements. The common refuge is word-memorizing and a vain conceit of knowledge.

II.

The elementary study of psychology demands unequivocally the most careful, thorough, prolonged concentration of the will upon the things (of consciousness) intrinsic to a knowledge of one's own mind.

III.

Every human being has ever with him a perfect laboratory, a stream of thought, containing as its substantial current a constant succession of images. How to study this personal "stream of thought" in successive states of consciousness is the fundamental problem of psychological knowledge. Patience and perseverance to fix the mind on that which seems simple, and moving gradually, through an understanding of the plainest acts of consciousness, up the scale to higher problems, are the inner secrets of successful study.

IV.

The initial, and indeed the main, difficulty in the study of psychology is the strong habit—no doubt springing from instinct—of *thinking in terms of objects external to the mind.* Slight reflection is sufficient to convince any one that there is nothing material in consciousness; that no material object can be in the mind; and that, indeed, not even the thoughts of others can be in my mind. When I see an object—a tree, flower, house, for instance—it (the object) is not in the contents of my consciousness. But something is there, and that *something* in some way corresponds to the external object which "I see." The things intrinsic to a knowledge of psychology are in one's own consciousness, and must be studied there. External objects, of sight, sound, touch, etc., are outside the mind, and are the external causes of internal or conscious effects.

V.

The separation, in thought, of consciousness from all externalities, either material or in the minds of others, is absolutely necessary to anything like a profitable study of psychology. The proof of this separation is clear and convincing, but the habit of thinking in terms of things external to one's own mind is exceedingly difficult to to overcome. Experience shows that persons who have really studied, and in part mastered, other subjects are prepared to enter into the problems of psychology, but those—and there are many—who have never really studied any other science are very poorly prepared for this new subject.

VI.

In the direct study of one's own conscious acts and states there is one inherent difficulty — the stream of thought flows on with extreme rapidity — one image goes, another comes—while external objects appear to be somewhat stationary.

Drawing inferences without requisite data is a common fault in the study of psychology, as in other subjects. Long, careful, all-sided investigation should always precede even a tentative inference.

VII.

One very common vagary is to be noted —that of discussing the exceptions before the rule is understood. Instead of investigating the plainest facts the student often glides into the most abstruse questions, as if controlled by the riddle instinct; for instance, he will concern himself with the problem of automatism before understanding acts that are plainly not automatic.

VIII.

A good working knowledge of the relations of consciousness to the brain and nerve system is indispensable to the study of psychology. It is, however, by no means a preliminary study. Physiological psychology proposes to explain the physical causes of mental effects, while it is evident that effects should be studied before causes. When a student discovers his own images and imaging power, he becomes eager to learn the physical causes of consciousness.

IX.

Exercises are here suggested which may enable the student to separate, in thought, his acts of consciousness from all other things. Fully *realize* the truth of the sentences by steadily holding in consciousness the thought expressed:

1. I am conscious.
2. I am now conscious of something: *See, hear, touch, read.*
3. That something of which I am conscious is in my consciousness.
4. That something which is in my consciousness is not outside of my consciousness.
5. Nothing external to my consciousness is ever in my consciousness.
6. Nothing material is in my consciousness. That which is in my consciousness has no length, breadth, or thickness; it does not occupy space; it has no weight.
7. I am conscious only of that which is in my consciousness.
8. I *know* things outside of my consciousness, but I am not conscious of them. I know things outside of my consciousness, because I have things in my consciousness which I believe correspond to external things.
9. If I would know my mind, I must study the things in my consciousness, separated from all other things.

X.

REMINISCENCES. Recall many things that have happened to you personally.

1. Think of the house in which you were born, or one in which you lived in early

life. Hold the image that comes first steadily in your consciousness. Note what comes in. How long can you hold this image or these images? What comes in besides images, i. e., things that correspond to external objects?

2. Recall a vacation in the country that you have had; the landscapes, houses, experiences. Hold one landscape steadily in mind. What happens in your consciousness? What comes in besides things that correspond to external objects?

3. Recall your first day in school. The first party you ever attended. Some accident. A trip on the cars. A voyage, if you have made one.

These are suggestions of thousands of recollections. It would be a good plan to recall your entire life from the earliest recollections.

What inferences can you make? In all your reminiscences there are no objects before you (acting upon your mind), but you have things in your consciousness. What besides images? What is the limit of your recollections? If you cannot recall images of an event, what can you recall?

XI.

Imaging. What mental action precedes the doing of any work?

Make a large number of experiments in this direction and note what happens in consciousness. Plan (1) a dress that you propose to make, (2) a dwelling-house in which you would like to live, (3) a dinner that you propose to get, (4) a garden, (5) some article that you propose to make in sloyd. These are merely suggestions of countless things that you may plan.

Do you ever plan any work without first imaging what you propose to do?

Description. Describe objects to others by speaking or writing. What is the mental process? Tell a story. What is the mental action before you tell the story, or while you are telling it? What must you have in your mind before you are able to tell a story or describe an object? Converse with others. What must you have in consciousness when you describe anything?

XII.

Hearing Language. What goes on in consciousness when you are hearing language? Get some one to pronounce words to you, the names of objects, one after the other; for instance, house, fence, trees, street, river, canal, bicycle, horse, dog, etc. What happens in consciousness?

Have words pronounced that do not directly recall images. What words do recall images directly and what words do not? What is the function of words that do not recall images? Get some one to tell you a story. Recall it and tell it to some one else.

What is the mental process of hearing language? What happens in consciousness when you fail to understand a word? What happens when you do not know the meaning of a word?

XIII.

Reading. Ascertain by many experiments what the mental process of reading is. Get some one to write words on the blackboard for you. Shut your eyes while the words are being written. Open them, and see what the effect of the words is upon you. The first words written should be nouns; for instance, goose, hen, pig, cow, house, etc.

A part of speech has a particular mental function.

Ascertain by experiment what the mental functions of different parts of speech are. Begin with verbs, followed by adjectives, conjunctions, prepositions, adverbs, etc.

It would be very profitable to take the parts of speech one after the other and get at the psychological function of each part.

What parts of speech arouse images directly? What parts of speech do not arouse images directly? What is the function of words that do not arouse images directly?

[NOTE: It will be readily understood that language should arouse *like thoughts* in the minds of all who hear or read language. A word like "run" or "walk" may indirectly recall images, but it will act in an entirely different way on the minds of the different hearers. One might think of a man walking, another of a cow, and another of a horse.]

What is the mental function of a word? of a sentence? Analyze the sentence in its relation to your consciousness, and tell what each word does for a conscious state.

Read a story and then recall it. Reflect on it. What do you recall?

Recall stories that you have read in the past.

What goes on in consciousness while reading?

What is the difference between study of text and reading? Try a number of experiments. Why is study more profitable than reading?

What discoveries in regard to your own consciousness have you made?

(*To be continued.*)

Social Occupations and History

Emily J. Rice

Investigations in all parts of the country in regard to history in elementary schools show that there is very little work in this subject below the two highest grades. In these grades, American history receives some attention with a view to the cultivation of patriotism, a purpose almost uniformly assigned. It is evident that parents and educators believe that study of American institutions will help the future citizen to fulfill his obligations toward the government; that, somehow, knowledge that can find no immediate expression in action will be transmuted, long afterward, into good citizenship. They see no serious mission for history until the children are old enough to take an interest in political affairs. Consequently, only in connection with this one institution of government is any attempt made to give our children a feeling of their social obligations.

This view of the educative value of history fails in the first requisite for successful teaching. The interests of the children in the elementary schools are not primarily, even in the two highest grades, in political and governmental conditions. They are rather in the social life and occupations of people, in industries. Fortunately, such occupations are finding an entrance into the curriculum. Whereas the school has been regarded in the past as a place where certain things were to be learned, it is now considered as an organization for social work. Cooking, sewing, and manual training may be grudgingly introduced as extra studies, yet there is no doubt that more and more the school will reflect the varied activities of the outside world.

These social occupations are a foundation for the only study of history which the children of the elementary schools can use in any vital way. A great field is here open for the teacher of history to unite the head and hand work, to throw the light of the race experience and the ideals of its literature upon the actual life of the children. The schools are in danger of allowing the same divorce between thought and work that is the bane of our industrial system. In earlier times, the person who spun, or wove, or made a machine, knew for what purpose he was working, and felt that he was giving something by his labor which was of use to others. Now the average worker comes in contact with only a small part of the product, and feels no relation between his own labor and the world for which he toils. His life is narrowed down to the automatic performance of a set task, and his power as a human being declines proportionally. In school, we teach certain intellectual processes on the one hand, and gradually we are introducing on the other hand such handicrafts as are demanded by the changed conditions of the outside life. So far, very little has been done to relate these two kinds of effort. The children enjoy hand-work because it furnishes an outlet for their abundant vitality; but they feel no more than does the laborer in the factory the relation of their work to that of the vast army of toilers in the world, past and present, or to the evolution of social institutions. It is the mission of history to put the individual in touch with the broad field of human endeavor, to give the larger world life.

The historic study of industries gives the children a desire to try the experiments that have been tried in the past, and make over again the inventions which have given us our modern comforts and conveniences. This history has an outlet in expression, and can be tested by results in action. The old tests of knowledge have failed, and the new ones which are taking their place are power to reason from conditions, power to carry out in construction any plan formed, the growth of ability to put thought into execution, and the desire to work and live in harmony with others.

There are three fields of subject-matter that seem especially adapted for this kind of study. The beginnings may be made by going back to the most primitive methods of work, the earliest inventions of tools, implements, and weapons, methods of gaining food and clothing, and means of shelter and defense. To trace primitive methods of obtaining food from the precarious life of the hunter to the storing up of food for future use by the shepherd in his flocks and herds, and finally by the farmer in the ground, which yielded for him year after year its permanent supply, is to gain some notion of the toil involved in any line of progress. Actual work in making metal tools and pottery, in spinning and weaving, in sewing and house-building, gives experience. Tracing these arts from their beginnings relates that experience to our present industrial system. The story of the ways in which people have united in social groups in order to work to the best advantage leads up to the necessity for government, to commerce and city life.

American Colonial history is the second field of subject-matter especially adapted for the study of industries. Primitive life prepares the way for it, by showing the use that early people made of nature's resources. Colonial history illustrates the relation of man to a definite region. It shows the development of a simple industrial life, with none of the complications growing out of our modern factory system. The pioneers were thrown back into primitive conditions, and had to win their own way in material things. Different groups of people were obliged to meet their necessities according to special conditions of soil and climate. In this study, as in that of primitive life, we trace man's conquest over nature, but at a more advanced stage of his progress. The energy, industry, and patience of the sturdy Colonists, and their devotion to principle, make this a period of history which is as valuable to the children as any in all the range of human experience.

As Colonial history is usually taught, it becomes the story of individual experiences. It should trace the overcoming of difficulties, the hard labor to produce food for the community, the economic life of the people, the household industries, the effects of the varied occupations of the North, and in contrast, of the staple products of the South, upon social life, and the effects of these social conditions upon government. It should follow the history of corn and tobacco, of flax and hemp, of cotton and wool, of wood and iron.

Here, as in the study of early man, it is possible for the children to gain something of the experiences of the historic people, to overcome certain of the obstacles which they met, and to enter into the spirit of their hard labor. If the children weave one small web on an old-fashioned hand-loom, they get a fuller conception of the Colonial period than they would by reading many stories about John Smith or William Penn.

Colonial history occupies the central place in our course of study in that it seems to be the best material for the middle grades. From it two lines of work naturally follow. The movement of the American people from the seaboard westward, pioneering all the way across the continent, is one of these lines. In this study, economic and social conditions give a foundation for understanding political institutions. In the higher grades, the children may come to the study of government with a habit of seeing the reality in history and of using their conclusions in some active way. A second line of work is tracing our social and political life from their sources in European history.

The third field of subject-matter for the elementary schools is, then, that of government, with its basis in economic conditions and its starting-point in civics. Interest in civic conditions and in current events will lead to an intelligent investigation of their causes. We should make the present our point of departure, and constantly return to it. The study of civics needs history to show the origin of any present state, and history needs civics to give it impulse and purpose. Practical work in investigating local conditions may be as useful here as was the shop-work of earlier years. There are questions of streets and transportation, of building laws and architecture, of shops and factories, of parks and playgrounds, of organization and officers, which call for active effort and industry, and demand historic explanation.

In order that the individual may take a vital part in social progress, he must feel the social value of his own occupations and interests. The habit of his life must be fixed in acting upon conviction, and convictions must come from insight into the meaning of activities. He who feels the artistic possibilities of handicraft will have no scorn of labor, and will be willing to do his part of the world's work. He who is accustomed to social work in his earlier years will help toward the realization of a more unselfish spirit in the community life. When our children study ideal civic conditions in school, we may hope for a public conscience that will redeem our political life, and a sense of art that will give us civic beauty.

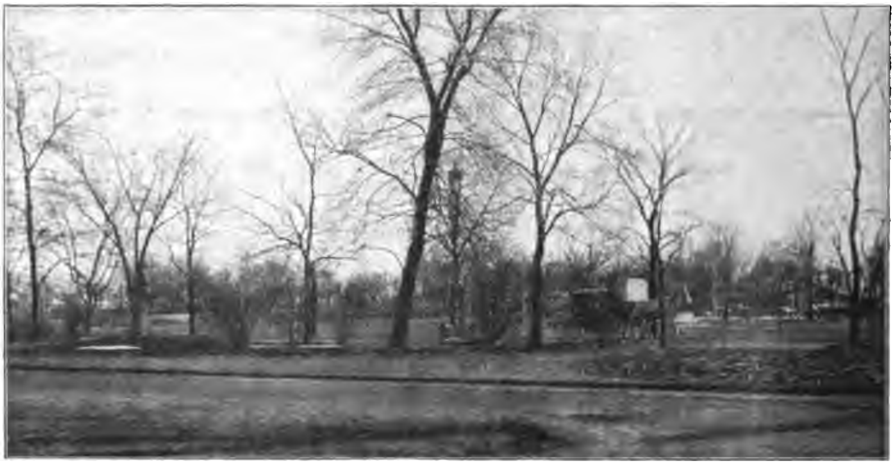
Pedagogic Course in Nature Study

Charles W. Carman

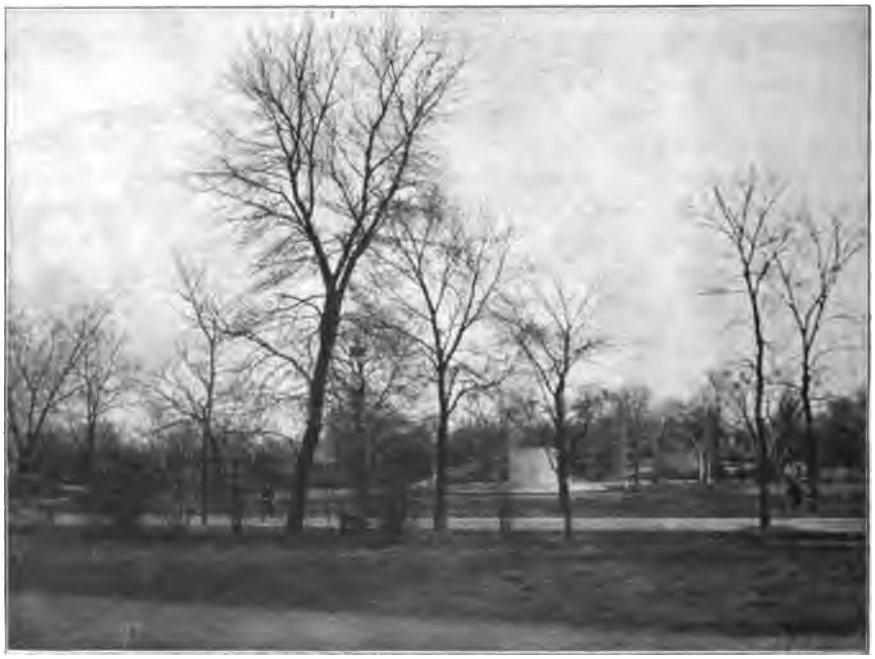
LINCOLN PARK, MARCH 31ST

The nature study classes, at the present time (April 15th), have entered upon but a portion of the work outlined in the April number. Group III was selected to take precedence of the other groups whenever the weather would permit visits to the parks. During the three visits made the general landscape was noted and sketched. The elm is the type of tree selected for special study. Its form and method of branching were noted and sketched. The sketches are to be preserved for comparison with those made after the foliage has begun to develop. The more marked changes noted, during the first two weeks of April, are the disappearance of the snow, the appearance of the birds, and green in the place of the dead brown turf. The swollen condition of the ends of many of the stems has been noted, but no leaves have been developed. Bulbs and seeds have been developed and germinated in water-bottles, and sketches of the changes have been made and preserved. One of the bulbs, since April 1st (fifteen days), has developed a combined length of stem and root exceeding nine inches. Each student is making sketches of the daily changes in a given kind of seed, by planting thirty or more in mold, and removing one each day for the observations.

Group I has been studied on days unfavorable for study in the parks. Methods of producing illuminating gas from coal and from calcium carbide were illustrated and discussed in the classroom. An ideal



LINCOLN PARK, APRIL 8TH



LINCOLN PARK, APRIL 15TH

PAINTING BY SEVENTH GRADE PUPIL

gas-plant was studied by means of the projection of a section upon the screen. A visit was then made to a large gas-plant, and, aided by the chief chemist and superintendent, the various processes were traced and explained. Reports and discussions were given in the classroom on the following day.

The work during the remainder of April and for May will be a continuation of the outline given in the April number of the Course of Study.

Geography

Zonia Baber

One of the chief attributes of a teacher's course of study should be its sectional elasticity. A rigid plan of action may be efficient for the manipulation of inanimate objects, but it is found inadequate in its application to human beings. When a course of study becomes crystallized and fixed, both pupils and teachers are apt to consider that its boundaries encompass all of educational and cultural value; while the wealth of knowledge which lies beyond its restricted limits is seen in distorted perspective.

The necessity of a definite, carefully considered plan of work is paramount, but one which admits of changeable definiteness is to be preferred.

The chance visit of a bird, insect, a strange fruit, or other object brought into the schoolroom, a rain or snow storm, may form the basis of lessons of far more intrinsic value than the regularly planned lessons of the day could afford.

The world has become so small that each morning we cast our eyes over the entire surface of the earth and note its daily changes. The newspapers and magazines have become the universal text in history, geography, and political science, and they have more influence in shaping national and international behavior than we are sometimes willing to admit.

A child's newspaper reading needs often more careful direction than his reading of books. One may put only good books in the way of the reader, while the newspaper parades the evil and the good upon the same page. A teacher may do a great deal in establishing a standard of what news is of worth by daily or weekly reports upon happenings which are of educative interest.

The movements of the centers of geographic interest cannot be predicted a year in advance; hence any preconceived scheme for teaching geography must be sufficiently elastic to admit of the consideration of those parts of the globe which thrust themselves into the arena of international interest.

The struggle for independence in South Africa has brought the "Dark Continent" so near the American people that the Transvaal, Orange Free State, and Cape Colony are as familiar as the adjoining county.

China has succeeded in holding a worldwide audience breathless for a year, and we find ourselves tracing the behavior of Russia, Great Britain, Germany, France, and the United States, in the Orient, with more concern than the doings of the state Legislature or of Congress.

China is to-day an international laboratory where the progress of civilization of the "enlightened" and "barbarous" (?) nations is being measured and recorded; where the moral and religious character of nations is finding a civil test.

A shrine has been erected there to the supreme god of modern civilization, "Commercial Expansion," on whose altar the Occidental nations vie with each other in the sacredness of their offerings, until self-respect seems about to be sacrificed.

The building of the Isthmian canals; the laying of the new ocean cables; the trans-African telegraph; the expeditions to the Arctic and Antartic regions, and other scientific explorations; the building of the trans-Siberian railroad, are all subjects of present vital interest in human progress, and their meaning and importance should not be overlooked in our geographic teaching.

Pedagogic School: CHINESE EMPIRE, KOREA, AND JAPAN.

I. CHINESE EMPIRE.

1. Topography of Eastern Asia.

(a) Plateaux: Tibet, Pamir, Gobi.

(b) Mountains: Himalaya, Kuenlun, Altyn, Tagh, Altai, Yablonoi, Khingan, Tsin-ling-Shan.

(c) Plains of China: Origin; use.

(d) Rivers: Yang-tse-Kiang, Hoang-Ho, Si-Kiang, Tamir, Amur.

2. Climate.

(a) Winds; influence of high plateaux; deserts; typhoons.

(b) Rain: Account for summer rains. Influence of fringing islands.

3. Soil.

(a) Loess region: Extent; theories of origin; use; influence on Chinese civilization.

(b) Red earth region: Extent; account for productivity.

(c) Alluvial plain: Formation; agricultural uses.

5. Products.

(a) Agricultural: National standing of farmers; government encouragement; manner of soil cultivation.

(b) Minerals and metals: Extent of coal deposit, gold, silver, jade, copper, etc.

(c) Manufactory: Home manufactories; how carried on; introduction of factories.

6. Cities: Peking, Cheefu, Shanghai, Hong Kong, Canton, Nanking, Hankow. Plan of building cities; pavement; domestic and religious architecture; means of procuring water, light, and heat; transportation facilities in North and South China.

7. Education: Describe a Chinese school. Describe examination in Peking or Canton. Influence of education on government.

8. Present political condition. Boxer movement an incident in the battle between Occident and Orient. Nations interested in political and commercial conditions in China.

History: Short story of China's past.

Questions: 1. What constitutes China's greatness?

2. What causes China's weakness?

3. What can the Occident learn from the Orient?

4. Should Russia control Manchuria?

5. What justification is there for England's control of Kowloon, Hong Kong, Wei-hai-wei? Germany's occupation of Kiao Chau? France's claim to Hainan?

6. What was the influence of the Chinese-Japanese war?

7. What do you predict for the future of China.

References: Williams, *Middle Kingdom;* Huc, *Chinese Empire* and *Travels in Tartary, Thibet and China;* Mill, *International Geography;* Standford's *Compendium of Asia,* Vol. I; Reclus, *Asia,* Vol. II; Holcombe, *The Real Chinaman;* Smith, *Village Life in China, Chinese Characteristics, Why the Chinese Dislike Foreigners* (Outlook, Vol. LXVII, pp. 216–221, 1901), *Remoter Sources of Troubles in China* (Outlook, Vol. LXVI, pp. 879–883, 1900); *Sources of Trouble in China* (Outlook, Vol. LXVI, pp. 1036–1041, 1900); *Anti-Foreign Crusade in China* (Outlook, Vol. LXVII, pp. 113–118, 1901); E. Reclus, *Vivisection of China* (Atlantic, Vol. LXXXII, 329, 1899); Hart, *China Reconstruction* (Fortnightly, Vol. LXXV, pp. 99–193). See full reading list.

. II. KOREA.

1. Position and extent.

2. Coast-line: Numerous islands.

3. Topography: Location and appearance of mountains, Kang-swu Do, volcanoes. Rivers: Han, Yalu, Tai-dong; use to country.

4. Climate: Rain, wind.

5. Products: Cereals, roots, tobacco, cotton, hemp.

6. Cities: Seoul, Fusan, Mokpo, Chemulpo, Won-San. Domestic and religious architecture.

7. People: Appearance, dress, customs.

8. History: Relation to Japan; to China. What is the relation of Russia and Japan to Korea? Which has best claim? How would it benefit Japan if she controlled Korea? If Russia controlled Korea? What advantage would she derive?

Why does England control the revenue of Korea as well as of China?

References: Mill, *International Geography,* p. 542; Stanford's *Compendium of Asia,* Vol. I, p. 323; Reclus, *Asia,* Vol. II; Norman, *The Far East,* p. 323; Bishop, *Korea and Her Neighbors;* Griffis, *Korea, the Hermit Nation;*

Williams, *Middle Kingdom*, *Korea;* Curzon, *Problems of the Far East*, pp. 85-217.

III. JAPAN.

1. Extent of islands. Most important islands.
2. Surface: Mountains, volcanoes, short, rapid rivers.
3. Climate: Direction of winds, typhoons. Summer rains; explain.
4. Resources: Mineral: Coal, iron, copper, silver, gold, antimony. Where found?
5. Flora and fauna.
6. Cities: Yokohama, Tokyo, Kobe, Osake, Kioto, Nagasaki. Characteristics of domestic architecture. Influence of earthquakes on architecture. Religious architecture; Buddhist and Shinto.
7. Artistic development.

References: Rein, *Japan*; Griffis, *Mikado's Empire;* Hearn, *Glimpses of Unfamiliar Japan;* Mill, *International Geography*, p. 545; Stanford' Vol. I, p. 446; Reclus, *Earth and Its Inhabitants*, Vol. II; Murray, *Handbook for Japan:* Chamberlain, *Things Japanese;* Bird (Mrs. Bishop), *Unbeaten Tracks in Japan;* Scidmore, *Jinrikisha Days.*

Illustrative materials to be used: Photographs, stereopticon views; costumes of Japan, Korea, and China; books used in the schools in China, Japan, and Korea; paintings, written works, and sewing specimens from Japanese schools; specimens illustrating cloisonné-making, lacquer, keramics, embroidery, tapestry, cabinet specimens, etc.

Expression: Model in sand Eastern Asia, including Japan.

Draw in relief Korea, Japan, and China. Draw typical landscapes.

Art

John Duncan Antoinette Hollister Clara Isabel Mitchell

Geography: Two lessons a week will be given in the Pedagogic Class in geographic drawing. During this month the class will study the topography of China and Japan, and in our art work we shall try to represent characteristic landscapes of these countries.

The Yang-tse and the Hoang-Ho will be taken as typical rivers, and Fusiyama, the sacred mountain of Japan, as a typical volcano. The students will familiarize themselves with these regions through the medium of photographs and stereopticon views, and will then express their conceptions upon the blackboard, filling in as much detail as they may command.

We shall also picture the fields of rice, and tea and cotton plantations, showing the processes of culture and manufacture.

Problems of technique will come up in the difficulties of drawing, and will be considered as they present themselves. The questions of light and shade, perspective, and the rendering of textures, will be informally discussed.

Beginners are apt to fall short in rendering the surfaces of things, and the only method of correcting the general appearance of wooliness in a drawing is to demand that the student focus the subject-matter more sharply in consciousness, for it is by stronger imaging of the rocks, alluvial soil, vegetation, and water that they assume their individual qualities and textures.

The method of work of the students of the Pedagogic Class will necessarily differ from that of little children. Older people are conscious of limitation and of the medium of expression. For example, children are not early troubled by questions of perspective. For a long time they are contented to draw things, not as they see them, but as they know them to be.

It is difficult for children to distinguish between their tactile and their visual

DRAWING IN COLORED CHALK
By student in first year of High School

images, and they must not be expected to do so with any degree of precision. Their drawing will very properly express all their knowledge of things gained through every channel. With fuller experience they will come to distinguish the two classes of images ever more and more fully. The first questions they put in regard to difficulties of perspective indicate their first conscious effort to differentiate their visual from their tactile and motor imagery. Their first attempts at perspective are concessions of the tactile imagery to the visual. Until this stage of recognition has been reached, the subject need give the teacher no concern.

Whenever children begin to be hampered by their want of knowledge, the teacher will direct attention to the facts of appearance (as, for example, that men seem smaller when at a distance than when seen near at hand; that lines of streets, sidewalks, and eaves of houses appear to come together as they go farther and farther off; that things are more distinct, have brighter lights and darker shadows, in the foreground than in the background); all this, however, without too much insistence to the hindering of the more serious aims of the drawing. The teacher should only remove the obstruction to the child's expression, and not make occasions for lectures upon technique.

Science: We shall continue the work upon buds and twigs outlined in April, and go on with the drawing of germinating seeds and bulbs. We shall also continue to paint the landscape in water-color, to bring out the changing aspects of the season, and will make a more intimate acquaintance with the trees of Lincoln Park, sketching with pencil and brush.

A few of the common trees will be especially studied, that we may come to recognize the essential character of each (that which distinguishes it from all

BLACKBOARD DRAWING
By member of Pedagogic Class

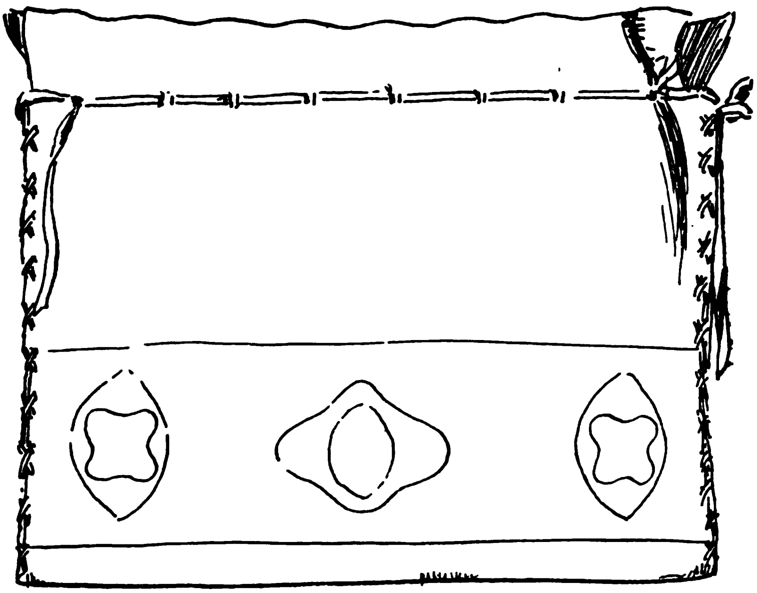
others), and gain the power of expressing that character in the most economical way. To get at the type, we shall look at many individuals, abstracting the ideal from the real. We would have the students cultivate this habit of mind of seeking the general in the particular, and would have them realize that the best technique in art is always the simplest and most direct way of expressing the essential characters of things.

Illustrations: During the past month we were occupied with the story of the *Sleeping Beauty*. The students were surrounded with pictures, from the school collection, of castles, of kings and queens, princes, pages, and animals asleep and awake, to assist them in setting the little stage that lies within the four borders of their painting pads, costuming the people and dramatizing the scenes of their imagining.

These school pictures do not illustrate the story upon which we are at work, and so the students cannot merely copy them. The figures are not in the proper attitudes. The most the students can do in this way is to adapt a little here and a little there; they must adjust and arrange everything. They feel that it is not altogether reputable to copy, that it is much better, more honorable, and more educative to invent for themselves. The school picture collection, however, is helpful even here, and to the most original it affords suggestion and stimulation.

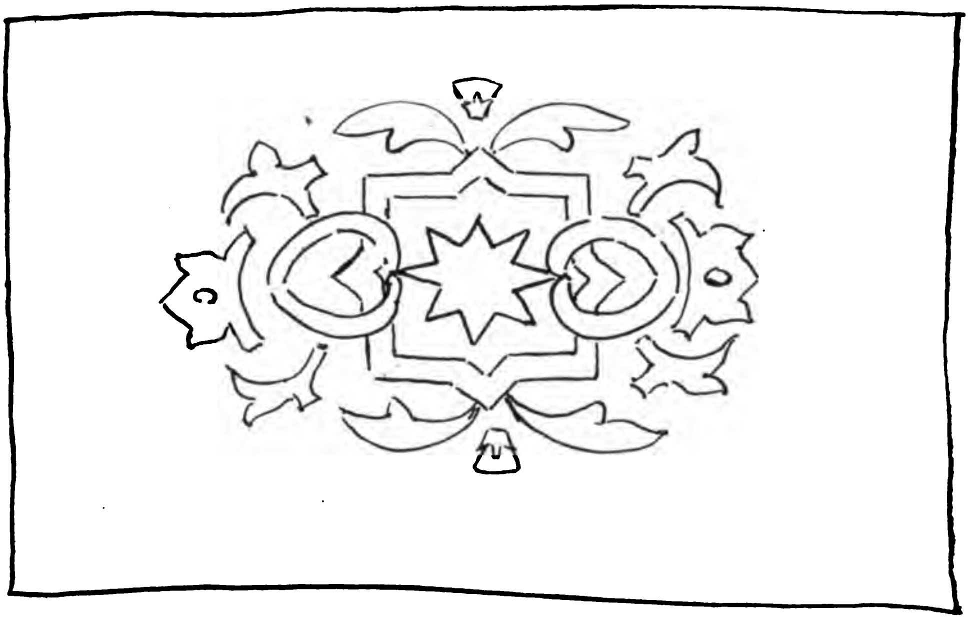
In May we will take up Greek stories and will saturate ourselves in Greek art.

Textiles: The textile work is a continuation of basketry, weaving of small squares for rugs, cushions, and curtains, spinning, and decorative needlework. Baskets already finished have been made of reeds (bought of Marshall Field & Co.), Indian splints (bought of George D. Mitchell, Indian Island, Oldtown, Maine), and raffia vegetable fiber (bought at Vaughn's Seed Store, Chicago).

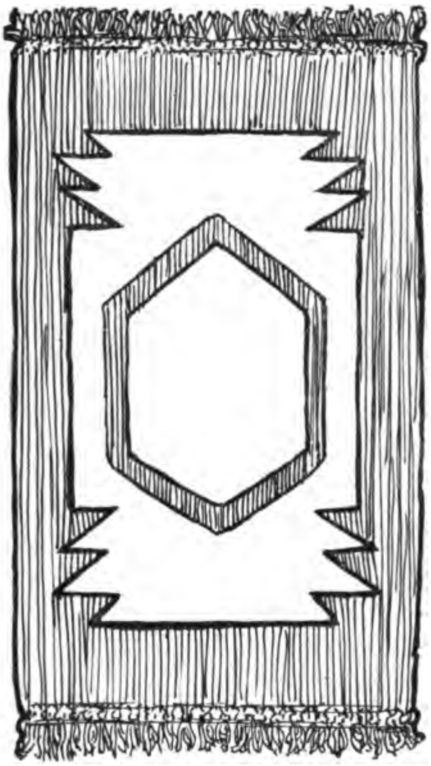


LEATHER BAG
Designed and made by student

Embroidery has been, and probably will be, confined to the simple processes of cross-stitch, satin-stitch, chain-stitch, and French knots, as these are considered all that can well be used in teaching children. The things so far designed are sofa-pillows,



COVER FOR CUSHION
Appliqué in leather. Designed and made by student



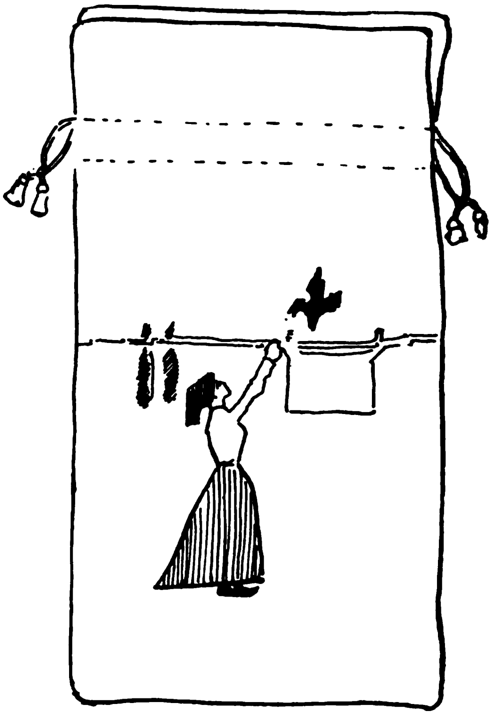
RUG, 20x80 INCHES
Designed and woven by student

were warned against a too naturalistic treatment.

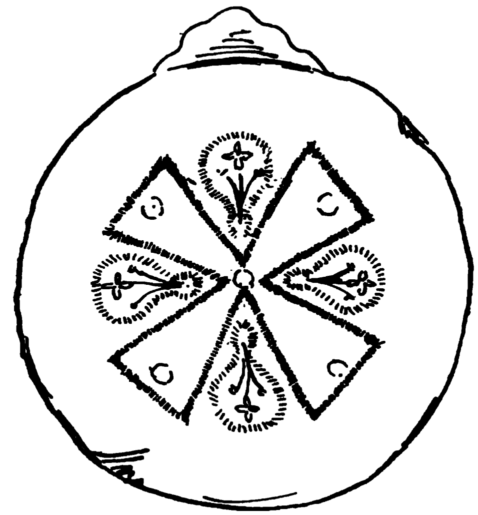
Though nature is the great source from which we derive all, or nearly all, the motives for our ornament, the things that we take from her must be subjected to certain modifications before they are suitable to our purposes. They must be adapted (1) to the special technique of the craft; (2) to the purpose of the work; (3) to the position the work will occupy; (4) at the dictates of the architectural sense, the desire we have for order, proportion, symmetry, rhythm, and we might almost say rhyme, the repetition of parts; (5) to fancy, (imaginative play).

The materials used in weaving are wool-roving, carpet yarns, Germantown zephyr, and cotton carpet-warp. Experiments are being tried in the use of rope embroidery bags, and table-centers. The designs are simple and conventional, but original.

Left to choose freely, the students have taken suggestions from the geometrical patterns in the decorations shown them for study, rather than from the natural forms about them. Few instructions have been given in the directing of pattern-making as to motives of design or rules for working them out. Students have been encouraged to plan the construction and decoration of objects to fit the *use* for which they were intended; to please the taste of those by whom they were to be used; to avoid ornamentation for which they felt no use and from which they got no genuine pleasure. A dozen different geometric arrangements were shown them for constructing borders and all-over patterns, and they



LAUNDRY BAG
Designed and worked in cross-stitch by student



LEATHER FOOT-STOOL
Designed and made by student

silk, for weaving purses, book-marks, and small bags.

Embroidery is done in coarse linen, art linen, and on our coarsely woven woolen fabrics.

[NOTE: Very beautiful examples of primitive and good art in basketry and rug-weaving may be seen in the art department of Marshall Field & Company and at the Field Columbian Museum.]

References: Owen Jones, *Grammar of Ornament;* Henri Mayraux, *A Manual of Decorative Composition;* Myers, *Handbook of Ornament;* Lewis Day, *Manual of Design* and *The Art of Embroidery;* Paulson Townsend, *Embroidery, or the Craft of the Needle;* Art Journal, *The Studio* and *The Artist.*

Speech, Oral Reading, and Dramatic Art

Martha Fleming

Pedagogic Class: This class has been studying the construction of the drama, and with this in mind has read several plays—*Hamlet*, *Romeo and Juliet*, *Cyrano de Bergerac*, and *L'Aiglon.* Among the points discussed were: Essential characteristics of a drama. Relation of the drama to life. A play as an organic whole. What is in the mind of the writer of a play when he begins to write? Value of costumes and scenery. What should they do for a play? How much should we depend upon scenery and costumes for the plays arranged by the children? Do the children themselves demand scenery? Relations of the drama to pictorial art. Relations of the drama to music. Limitations of the drama. Pantomime in First and Second grades. Do the children in these grades naturally use language in their dramatizations?

At the present time members of this class are writing up the dramatic experiences of their own childhood as they remember them. They are also watching and studying manifestations of the dramatic instinct in other children, and writing up their observations for further use. This will give us a large amount of data which will be some help toward solving our problem: How far is dramatic presentation the child's mode of expression? How shall we use the dramatic instinct for educative purposes?

Some of the spring stories written by this class in literature, under Mrs. Thomsen, as *The Sleeping Beauty* and *Beauty and the Beast*, were eliminated, condensed, and concentrated into little plays. *The Sleeping Beauty* will be played by the First and Second grades in pantomime, introduced by music and prologue, and accompanied throughout by music.

Geography: In May the Pedagogic Class will study the geography and history of China, Japan, and Korea, and they will naturally dwell upon the late trouble in China. Some of the stories and episodes that have been told by those who were in Pekin or in other places in China at that time will be related, and the one seeming most capable of dramatization will be resolved into a play. This will necessitate a close study of Chinese character and temperament, also a study of their social life and conditions, manners, customs, and costumes. The material for this study we have in the school. For references, see Miss Baber's outline. In this connection the class will read orally the address on Chinese jurisprudence by Wu Ting Fang, Chinese ambassador to the United States, also *The Chinese View of the Christian Easter* by the same author.

For the month's work in spoken English, see the December COURSE OF STUDY.

Mathematics

George W. Myers

Pedagogic School

Teachers who gather their ideas from the text-books as to methods of presenting subjects to pupils are apt to be led astray in many ways. One of the most common of these ways originates in the assumption that because the books usually introduce the subject with a formidable list of definitions of technical terms, the ability to give correct definitions is the *first* result to be sought. It would be difficult to commit a more egregious pedagogic error than putting this into practice. It is trite to say that the definition of a term, even though it may be made *verbally* intelligible, can have no vital significance to a mind devoid of the idea being defined, as used in the unknown subject. The necessity for and meaning of the implications and limitations of the definition can be appreciated only by the master of the subject. Consequently it should be borne in mind by the teacher that the ability to define terms intelligibly marks the *final*, not the *initial*, stages of study of an inductive, if not of a deductive, science. There is then less unreason in testing the degree of a pupil's mastery of a subject by a set of examination questions calling for definitions than in the teacher's calling for the definitions at the outset, though neither practice is advocated.

If, however, it be granted that an inadequate or incomplete definition must sometimes be taught, either because of the immaturity or faulty early preparation of the pupil, the partial definition must not be taught in such a way as to hamper the student later when he meets the necessity of learning the complete definition. For example, to teach the pupil that "multiplication is using one number as an addend as many times as there are units in another," or "is taking one number as many times as there are units in another," and that therefore it is not possible to multiply a number by ¾, because "you cannot take a number ¾ of a time," is pedagogical treason. The partial truth must not be taught as the whole truth and then so thoroughly drilled into the pupil that he cannot make the necessary extension of the definition when the time comes. The name of the pedagogical sins which may be enrolled under this category is legion, and mathematics is the chief sufferer from them.

Educators who have given the subject

most thought seem pretty well agreed that the earlier stages of number study and arithmetic should be inductive. If there is any one thing that the inductive sciences have taught us more clearly than another, it is the primary importance of clear and accurate ideas, and the secondary importance of their symbolic representatives. It behooves the elementary mathematical teacher to be particularly heedful of this principle which has taken pedagogical shape in the familiar phrases: "The idea before its symbol," "The thing before the sign," etc. Not to heed it is to go back to the methods of the old commentators 1800 years ago when any jargon of words passed for attainment.

Part of the artificiality which runs through current arithmetical teaching is due to the artificial character of the subject-matter. Another part owes its origin to the lamentable fact that many, if not most, of the grade teachers of arithmetic have never studied mathematics beyond the immediate needs of their positions, and are therefore not clear as to the ultimate purpose of their work. A third part is due to the fact that many forget, or do not believe, that the pupil may be familiarized with the fundamental ideas of arithmetic by actually working with number in a rational way, without any attempt to force arithmetical ideas and processes into the pupil's consciousness by requiring him to commit definitions whose significance and beauty depend upon the extent of their reach beyond his experience.

It would seem, therefore, that the use of such unmathematical terms as "and" for "plus" and "less" for "minus" while the pupil is engaged in acquiring the new idea of the nature of the processes of addition and subtraction is good pedagogy, if not good science. This does not mean that the terms "plus" and "minus" must not be taught at all in the grades, but rather that the ideas for which they stand should be first acquired with as little loss of energy as possible by the use of words which can have a meaning only after the acquisition of these ideas. To add and subtract rationally and intelligibly first and for some time (until the meaning of the operations is clear), and then to name the new acts with distinctive terms, which do not have a penumbra of popular and irrelevant suggestions clinging to them, seems also to be the *scientific* as well as the *pedagogical* order of procedure. This principle is of far-reaching significance in the teaching of arithmetic.

Let it be borne in mind that until the nature of number and of numerical operations has become familiar and facile to the mind, it is useless to call upon the learner to perform a mental act which involves the conscious recognition of these abstract ideas. The learning of a definition is such an act. After the pupil has worked with both concrete and abstract numbers until the operations have become in a degree automatic, he will have sufficient mental energy left from the simple doing to perform the mental act of abstraction with vigor and clearness. Until this state is reached it is useless, aye, positively harmful, to talk to the pupil of number as an abstraction, of the ratio definition of number, and of various other important attributes of abstract number which lie so deep down in the essence of number that even the philosophers wrangle over them.

But an idea of number must sometime be formed by the pupil. If his training has been of the right sort, the pupil will at no late period in his mathematical study—soon enough indeed—come to feel instinctively, to *sense*, the real essence of number as a mental product. Working for a while with numbered things before his senses, then with numbered things before his memory, he will gradually learn, from the act of abstracting, by which he sets aside from thought the qualitative attributes of things which constitute their individuality, and from the exercise of the generalizing faculty, by which he gathers them together under a quantitative aspect, how to withdraw his attention more and more from the concrete qualities of things and still to retain a vigorous mental grasp upon them. If the teacher is careful to have the pupil always work rationally with numbered things, either physically or mentally present, he will find him more ready than he thinks to perform the mental act by which the individual, with its qualitative differences, is dropped from thought, or better, is submerged to an extent, and the general, with its quantitative likenesses, is elevated into prominence. This is merely a roundabout way of saying that the abstract idea of number must be reached as a generalization from the concrete numbered thing. It would therefore be equally unpsychological to use no concrete things at all in number teaching, and never to use anything else. Number is in its essence abstract, but let us not forget that the road to its hidden mysteries lies through the concrete.

While much of the number work of the elementary grades is open to the criticism of being fragmentary, even to the verge of frivolousness, there is danger of going too far to the other extreme. The motive for the doing of the number work must be present to the child's mind with sufficient clearness to make a decided appeal to him. To draw his number work from a problem so complicated in its details, such as the determination of the cost of the materials and erection of an elaborate structure, requires too great continuity of thought, depends upon the appreciation of the value of a motive too ultimate to make a strong appeal to him, for the pupil to profit by it.

Such problems, at too early a stage, are practically without a motive for the child, though they may appeal strongly to the adult.

Topics for the preparation of papers and discussions:

1. Discuss the number work done in connection with the topographic map of the park with reference to its place and value in the grades.
2. What is meant to-day by the study of arithmetic for its utility? How does this differ from what was meant formerly by utility as an end of number study?
3. What should be allowed to become mechanical with the pupil in arithmetic, and what should not?
4. Is it ever wise to attempt to secure mechanical skill in the performance of operations which the attainment or maturity of the pupil make it impossible for him to understand at the time?
5. Should the maxim, "Tell the child as little as possible, and allow him to discover for himself as much as possible," be understood to mean, "Tell the child nothing at all"? Substantiate your answer.
6. What is meant by inductive methods of teaching? By deductive? Give an example of each. When should arithmetical study be made largely inductive, and when should deduction be begun?

Physical Training

Carl J. Kroh Caroline Crawford

The living worker, apt and of insight, is not slow to appreciate the fact that methods of study based upon mere statement of fact are not productive of lasting results. He enhances his study by a wise direction of effort toward the establishment of fundamental facts. Information and experience are gathered in the practical pursuit and study of the essentials of his particular subject; the relative values of procedures are adjudged in diligent practice and observation of work. Persistent effort in the search for fundamental facts is regarded essential to success.

Whatever the phase of work or order of investigation engaging the student of physical education, he is confronted with varied and complex problems, the nature of which not infrequently leads him to infer that some of the weightier questions affecting his particular study have not been generally exploited. Indeed, the range of application of the tenets of physical education is so wide and diverse that he finds his strongest incentive for the development of a healthy, vigorous, gladsome, and robust youth in the possible extension of his influence beyond the purposes of school and through life as a totality.

The practical work offers him a sheer endless chain of sequences, in concord with which he strives to systematize his material, that he may readily harmonize ends and means. He becomes proficient in measuring effort and learns to graduate his work as per indications of age, sex, and skill. He avoids excess by carefully distinguishing between healthful, orderly, and pleasurable gymnastic training, as contrasted with merely formal drill or mere pleasurable activity for the sake of recreation. He realizes the value of pedagogical procedure in this training, and the fact that much care, a set purpose, patience, and perseverance are needed to subserve the best interests of all and to establish permanent results.

In seeking to perpetuate the characteristics of this educational discipline, he studies the life as portrayed in the work of the gymnasium, a study of human nature at first-hand, expression in all its phases, of body, mind, and soul. He studies not only the physical, but the mental, social, and spiritual being as well, and as his conception of the uses of his particular subject enlarges, he adjusts and readjusts his methods in conformity with the teachings of science, avoiding all forms of specialization which are one-sided and of questionable value. His interpretation of proper methods of class, group, and individual work is based upon the character-index of the pupils as revealed in the free and organized play of the children, in the gymnastic exercises, games, and athletic sports of the elder youth, by the quality of control and of restraint of self manifested, by the quickened pulse and readiness with which the pupils respond to all reasonable behests. Thus he comprehends the larger import of educational gymnastics, encompassing so much that is needed for the enhancement of life and school work.

Free Gymnastics: The work in the gymnasium of the Grammar and High-School grades illustrated the sequent order of free exercises,* and numerous movement forms correlated with general and applied gymnastics.† The methods characteristic of the latter illustration were distinct from those of the former. One-half the time of the regular periods, three times a week, was devoted to this practice. Classroom work so far has been dispensed with.

There is a practical agreement with reference to the value of free gymnastics as a corrective means. Their importance as a fundamental work in body building is recognized. Views expressed with reference to the conduct of this branch of gymnastic work, however, show a wide diversity of ideas.

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*The effectiveness of the different movements and exercises employed in free gymnastics depends upon the order of their construction and modes of execution. The construction of an exercise is designed in accord with its purpose. It entails the consideration of certain factors which determine its gymnastic character. Force and resistance are variously employed in estimating effectiveness. The laws of leverage, applied in the gradation of work and the relation of basic positions to effort and effect, are of first importance in considering sequential order. The general or specific design of a lesson is also determinative in the selection of exercises with reference to form, kind, and order. Frequency of periods, regularity, space, and time are factors in progress.

†See next number of the COURSE OF STUDY.

It is intended that the work as presented shall prove helpful to the students who attend the regular lessons as observers. It is suggestive of the modifications indicated in a regular course of instruction.

Suggestions : I. The classification or the grouping of pupils for gymnastic purposes should be based on a careful consideration of individual conditions and qualifications.

II. Concert work should facilitate progress in the accomplishment of gymnastic and hygienic as well as educational purposes. Pupils of like abilities should be grouped together. Defective classification retards progress and entails modifications of procedure calculated to restrict effort to the minimum or average requirement.

III. The usual order of strength tests and measurements should be supplemented by exercises for ascertaining the degree of co-ordinative skill possessed by the pupil, determining his especial fitness for the work of a class or group in gymnastics.

IV. Instruction plans should emphasize definite class aims (see October COURSE OF STUDY) with a purpose in view of realizing the best possibilities by strengthening the general plan.

The various lesson programmes of the past month included tacto-gymnastics, i. e., free exercises executed alternately and simultaneously with marching, hopping, and running exercises in and from place. Theorder-of-movement direction suggested for the practice of free exercises of the first order (see February COURSE OF STUDY) was augmented by a study of movement possibilities in intermediate directions.

The free gymnastics of the next order will embrace exercises in kneeling, sitting, lying, and stem-supporting positions (on hands and feet), also in head, arm, and hand stand positions. In these positions the movements and exercises, involving elevation, flexion, extension, turning, etc., can be repeated, the respective positions limiting execution to the parts not employed in supporting the body.

The High-School students began a course in fencing during the past month. Foils were selected as weapons. The preliminary practice consisted of the study of the positions "on guard," of attack and defense, without arms; the "appel," advance and retreat, side-stepping and about-facing. The principal lines of attack were practiced with arms.

The natatorium was reopened, and frequented by pupils and students from all classes. The facilities for instruction in swimming are of the best.

Games played by the different grades: Hornet's Nest, Running the Gauntlet, Hare and Hounds—indoors. A description of these games will be furnished in a future number of the COURSE OF STUDY. Other games played: Foot-in-the-Ring, tugging and pulling games between individuals and teams, Indian wrestling. Putting the shot.and hurling of grip balls was a favorite practice with the High-School boys. For descriptions, see Vols. II-VII, *Mind and Body*.

The Organization of a Library

Irene Warren Frances Simpson

Cataloguing

When a library has been accessioned and classified, it is not yet in its most convenient form for readers until another record, the catalogue, is made.

A library catalogue is a complete list of all the material owned by a library, whether books, periodicals, pamphlets, music, pictures, or lantern-slides, arranged according to a definite plan and made accessible by printing or otherwise to the uses of the library. The purpose of the catalogue is to afford to readers a means of quick and ready reference, and when properly and intelligently made and used it should show the line of least resistance to the contents of the books on the shelves of any given library. A catalogue may be regarded in two ways; according to (1) the plan on which its entries are arranged, and (2) the external form in which it appears.

The special function and nature of any given library must always determine the plan of arrangement adopted in its catalogue. This plan may be one of two; either an arrangement by general subject, with minute subdivisions under each broad division, which is called in its various forms a systematic, classed, or subject catalogue; or a strictly alphabetical list of authors, titles, and subjects, called a dictionary catalogue. Both have advantages, and both are in use in leading libraries. A large library of scientific bent may, with great propriety, make use of the first or subject form, while a public, school, or circulating library usually finds the dictionary catalogue more convenient for its readers.

A subject catalogue should give in addition to the subject-word used, the author, title, and whatever other information concerning the book the library may decide to impart, and also the call number, giving the location of the book in the library, for the convenience of the reader if the library gives its patrons free access to the shelves, or for the use of the assistant if the open-shelf system is not in use. When the library is a large one, and its field comprehensive, a subject catalogue should be supplemented by an alphabetical list of all the subject-words used, with references from common synonyms not used. An author-list, also arranged alphabetically, is found to save much time and trouble, when placed conveniently near the subject catalogue. The disadvantages of this form of catalogue are apparent, since it must frequently necessitate the consulting of two and sometimes three separate records. Its chief advantage lies in its logical and suggestive arrangement.

The attendants of any library are accustomed to hear and answer one or the other of the following questions: "What books have you on a certain subject?" or, "Have you a given book by a given author?" Occasionally the searcher after truth asks for the book by its title, if that happens to be a striking one, as is often true in the case of fiction. The catalogue should afford to the reader and attendant a convenient and direct means of answering such questions.

A dictionary catalogue, as its name indicates, is an arrangement of author, title, and subject in one straight alphabet, and is regarded by most librarians as the most direct means of answering such questions.

Suppose, for example, a reader is interested in the subject of birds. Either he wishes a particular book on that subject, say Mabel Osgood Wright's *Birdcraft*, in which case he consults the catalogue under W, where he finds the book entered; or he wishes to know what the library has on birds, in which case he turns to the catalogue under B, where he finds not only all of Mabel Osgood Wright's books on birds, but also arranged alphabetically by authors all the books owned by the library on the same subject, with references to books on related subjects, necessitating therefore the consulting of but one list. The advantages of having such a list for consultation hardly need comment.

In compiling a catalogue it is also necessary to determine the external form which it is to take. Formerly, all libraries published printed catalogues in book or pamphlet form. Obviously such a catalogue could never adequately represent the resources of any library at any given time, since during the time required for the compilation, revision, printing, and proof-reading of such a catalogue the library would probably receive numerous additions, necessitating the almost immediate issue of supplementary bulletins. The disadvantage above mentioned of compelling readers to consult several lists in place of one again confronts us, though it is in part offset by the fact that copies of such a catalogue can be multiplied and allowed to leave the library either by sale or otherwise. One of the worst features in connection with a printed catalogue, however, is its expense, which would make it an impossibility for most small libraries, if there were no other objection to its use.

The only alternative is what is known as the card or slip catalogue, in which each book, whether it comprises one volume, a part of a volume, or several hundred volumes, is entered under its author on a stiff pasteboard card, which is provided with some device for fastening it safely in a drawer or case, where it can be consulted with ease, but from which it cannot readily be removed. This method, while it presents some very obvious difficulties, among which may be mentioned the facts that but a limited number of readers can consult it at the same moment, and that it can be used in but one place—the library—presents likewise the very decided advantages of allowing speed in compiling, by means of which the entries may be kept practically up to date, of allowing any number of insertions at any time, doing away with the necessity of printing supplementary bulletins, unless the library chooses to use such bulletins for purposes of bringing itself before the public, and of contributing very materially to an economical administration of the library. The form of catalogue, therefore, urgently to be recommended for a modern library, whether for a school, literary society, or public library, is a dictionary card-catalogue. A few simple rules for compiling such a catalogue will be given in the June number of the COURSE OF STUDY.

References: Spofford, *Book for all Readers;* Plummer, *Hints to Small Libraries:* Dana, *Library Primer;* Cutter, *Rules for a Dictionary Catalogue;* Dana, *Denver Public Library Hand-book.*

Kindergarten Pedagogy

Bertha Payne

During May and June the class will plan outlines which will be the starting-point for selection and adaptation of stories, songs, games, and hand-work in making and picturing for the children of the kindergarten.

We have selected the children of a certain neighborhood near the school to study through observation of their street play and games. By studying their environment, we may gain something in ability to trace the influence of surroundings in shaping their plays, and to find out more nearly what they need.

The neighborhood gives us typical city conditions, save that it is within walking distance of the park and lakeshore, which gives a much larger opportunity for familiarity with natural life. The children's homes are about the average as to means.

The first outline which has been begun is a skeleton plan of subject-matter for a year. Five principles have been worked out that serve as tests of the value of matter offered.

I. It must be a common experience of the mass of the children.

II. It must be of direct interest to all.

III. It must be of immediate help in their lives.

IV. It must be fundamental, leading to future interests and opportunities.

V. It must afford incentives to bodily expression in work or play.

According to these tests, much that is often used in the way of nature subjects, trades no longer followed here, and some Froebellian games must be ruled out for the children in this locality. To illustrate: The trade games of the farmer, miller, and baker get their significance, so far as the children are concerned, not because it is the autumn season, or because they illustrate the great law of interdependence, but because they are human activities that have actually been seen and heard. No matter how interesting or full of meaning these processes of plowing, sowing, reaping, carting, and grinding may be, we cannot make them real enough to serve a very large place in furnishing material for dramatization unless the children have had actual contact with these or similar processes.

The place may be supplied by processes in trade life quite as necessary to the personal and social life of the children, and carrying the same lesson of interrelation.

Another plan will be made more in detail, giving modes of presentation and suggestions for expression in songs, games, picture-making, and constructive handwork.

One principle that will be kept in mind in these detailed plans is the place given relatively to the incidental and essential.

Some topics are full of suggestion, that is, dramatic in character, and afford incentives and substance for dramatic play and drawing. Other phases of the subject may need building to fitly express the idea, while still others may demand real work. Each subject suggested will be criticised from the point of view that the word "balance" may express.

Froebel's writings will be consulted as reference whenever a principle has been developed by the efforts of the class.

Gardening in the Primary Grades

Flora J. Cooke

In April the Third and Fourth grades planned and constructed a hotbed twelve feet long and forty-one inches wide, and prepared it for use. To do this they were obliged to make a study of seeds, soils, and moisture, as outlined in detail in the April issue of the Course of Study. (See Mrs. Atwood's and Miss Van Hoesen's nature stüdy and number outlines for April.)

Each of the primary grades took as laboratory work some phase of the study of germination which the class was to investigate and report upon, the question in every case being to give the plants in the hotbed the best possible conditions for growth.

The seeds were placed under various conditions of temperature, soil, light, and moisture, and their development observed, recorded, and compared with that of the same kind of seeds under different conditions. That mode of expression was used—drawing, painting, or writing—which seemed best suited to illustrate the particular change that had taken place in the plant or seed.

In May the rate and the location of growth will be tested by placing ink-marks certain distances apart upon different parts of the plant and measuring the spaces after a short interval of time has elapsed.

The children will notice that some of the seeds planted come up more quickly than others with the same conditions. Seeking the reason for this will cause them to examine the seeds themselves, their coverings and the amount of stored-up food or energy which they contain.

Experiment. Force exerted by seeds in swelling; cause of swelling. Energy contained in sprouting seeds. Allow the children, *under careful supervision*, to try to lift a 50-pound stone weight, using both hands.

Experiment. Place a small quantity of seeds (100 grams) in a cylindrical cup (a piece of iron pipe closed at one end will answer the purpose). Upon the seeds place another iron cup having a small hole in the bottom. The second cup should fit inside the first one and extend an inch or so above its top rim. Fill the second cup half full of water. Upon the top of the inner cup let a bar rest, upon which is hung the 50-pound weight.

The children will understand how the seeds can force their way through the soil when they see them under these difficulties swell sufficiently in one day to raise the inner cylinder ⅛ of an inch from its original position. Thus their interest is directed to the real center of action—the stored-up energy—for the comparison of seeds.

Many of the children have gardens at home, and their experience will be utilized, as far as possible, in making inferences as to the proper treatment of our special plants, only those having been selected which would mature within two months—radishes, lettuce, onions, etc.

Their observations, however, will not be limited to these plants, and simple explanatory experiments will be suggested which the children can perform independently in answer to their questions, and they will be encouraged to report the results of their experiments to the class. They will probably discover: That certain weeds are stronger than our cultivated plants; that certain insects injure the plants; that certain plants need greater care than others; which parts of the plants develop first; use of roots and leaves, etc. They will learn, also, how different seeds germinate—

monocotyledonous, dicotyledonous, etc.; how they differ in their manner of growth, as bushes, climbing, creeping, and self-supporting plants; how they differ as to the edible parts, as root, stem, leaf, fruit, and seed.

The children will work in committees in caring for the contents of the hotbed; each committee being responsible for part of the work, but receiving suggestions from all the other committees.

All the children took part in the preliminary work, in the reading of extracts and adapted notes from United States Agricultural Reports in the determination of the kind of seeds to be used, and in the effort to give them the best conditions for rapid development.

Literature for the Primary Grades

Gudrun Thorne-Thomsen

Pedagogic Class

What does it mean—that never-ceasing cry of our little ones, "Tell me a story"? What is this craving, and what satisfies it?

At the age of three a child enjoys hearing over and over again his daily experiences about animals, people, the locomotives, the street-criers. This world is not a commonplace affair to the child as it is to us. It is all full of wonders, and he yearns to know them.

At no other time are the nursery rhymes so much enjoyed as during this period; the rhythm, the music in the verse, undoubtedly are the great fascination long before the words mean anything. Here also belong the tales with which we all are acquainted in some form or other, the story of repetitions, a joke and nothing more; as, for instance, the story of the pancake, which will be told in next month's outline.

In this wonderful world nothing is too wonderful to the child, and animals talk and act like human beings; man is in fact one with the beasts and the trees.

The child knows his own power to will and to do; to his mind all other things that do, will to do, also; the wind, the sun, the trees, even sticks and stones, seem like himself powers that exert their will; that is why he punishes the chair that hurts him or scolds the wind for blowing off his hat.

In this respect, as in so many others, we find the child nature like that of primitive man.

When the race was young, it knew but little about the laws of nature without and nature within self; but in the human soul was to begin an instinct of wanting to know; there were longings, hopes, and groping for the truth. Everything in man's environment asked him: How? Why? and demanded a reply. The reply is the literature of that day—myth and folklore.

The experience and wisdom accumulated by the race in the past found a lasting expression in the myth and fairy-story; here we have the innermost thoughts and feelings revealed, the religion and art of the time. The characters of the fairy-tale are simply variations of man's own self, and express his ideals and standards of right and wrong. The eternal struggle between good and evil is the great ever-recurring theme of the myth.

Why is it, then, that the child demands the story? It expresses his unconscious longings, hopes, and struggles. He demands that you speak to him in his own language, that you enter into his world with him, that you give expression to that which he feels but dimly and sees darkly.

If we recognize clearly why we tell stories, it becomes a simple task to determine what stories to tell.

Folklore and myths are our storehouses of material and inspiration. By a thorough study we learn to recognize the essentials in a story, to discern the genuine from artificial additions. We understand that different stories express different phases of life, the serious and the humorous; that there are stories fitted to all steps of development. The teacher learns to look for the significance of the story, and knowing the children, learns also how to adapt the story to their circle of experience.

Among the number of stories which have only a passing interest to the child, there are the masterpieces that wear well, that embody in beautiful language living truths. These should be told often, and should be illustrated and dramatized, so that they may grow and become a vital part of the child's life. Such stories are like all classic art; each individual gathers from them just what he is capable of taking in; to-day the story is perhaps but a pleasing picture, in a year it may have revealed some of its depths. Such stories we never grow too old to enjoy.

The Pedagogic Class has been studying the industrial development of the race—how man has climbed onward step by step, by doing and thinking out how to do better. In the stories the class has an opportunity to study the spiritual growth of the race, the development of ideals from the crudest standards to those of our present time.

Class-work: Stories will be told. Discussion as to:

1. Intepretation.
2. Dramatic expression.
3. Other modes of expression.

Next month several stories, presenting different types, will appear in the Course of Study, with a résumé of class-work upon them.

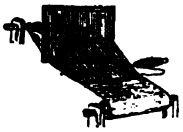
Reading Lessons for the Primary Grades

The Coat that Jack Wears

Written and illustrated by **Charlotte Perkins**, of P. T. C. (3 A).

Note—The children of the Chicago Normal Practice School had studied weaving, and had manufactured cloth in a crude way—cutting the wool from sheepskin, washing, carding, spinning, and dyeing it, and weaving cloth on looms which they made themselves. This lesson is a review and summary of the steps in the process.

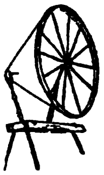
This is the coat that Jack wears.
This is the cloth, so warm and
blue,
That made the coat that Jack wears.



This is the loom, so strong and new,
That wove the cloth, so warm and blue,
To make the coat that Jack wears.

This is the thread that, colored blue,
Was used in the loom, so strong and new,
To weave the cloth, so warm and blue,
To make the coat that Jack wears.

This is the wheel, with its loo, loo, loo,
That spun the thread that, colored blue,
Was used in the loom, so strong and new,
To weave the cloth, so warm and blue,
To make the coat that Jack wears.



This is the wool, carded through and through,
That was spun on the wheel, with its loo,
loo, loo,
To make the thread that, colored blue,

Was used in the loom, so strong and new,
To weave the cloth, so warm and blue,
To make the coat that Jack wears.

This is the sheep on which there grew
The wool that, carded through and through,
Was spun on the wheel, with its loo, loo, loo,
To make the thread that, colored blue,
Was used in the loom, so strong and new,
To weave the cloth, so warm and blue,
To make the coat that Jack wears.

This is the man, and his scissors too,
That sheared the sheep on which there grew
The wool that, carded through and through,
Was spun on the wheel, with its loo, loo, loo,
To make the thread that, colored blue,
Was used in the loom, so strong and new,
To weave the cloth, so warm and blue,
To make the coat that Jack wears.

The Dog and his Image

ADAPTED FROM ÆSOP

Literature Series, No. 9

Sport was a greedy dog.
One day he took a piece of meat from a little dog.
He was not hungry, so he started home with the meat.
On the way he came to a bridge over a brook, and looked down into the water.
It was very clear and still, and Sport saw another dog looking up at him.
The other dog had a piece of meat in his mouth.
Greedy Sport wanted that too.

"R–r–r–r," growled Sport.
"R–r–r–," growled the other dog.
"I'll get that meat," thought Sport.
He growled again and showed his teeth.
The other dog showed his teeth too.
That made Sport more angry.
Snap! snap! Down went the meat into the water.
The other dog went away.
Sport looked sadly into the water.
Soon the other dog came back.
He looked sad too.
Sport went slowly home.
Do you think he was a wiser dog?

Iris

Literature Series, No. 10

Flora J. Cooke

Iris' father was the Sun, and her mother was the beautiful Water-drop.

The sun loved Iris very dearly and gave her dresses of beautiful colors.

He made her his messenger to earth.

One day Water-drop and the Sun made Iris a wonderful bridge.

They made it of the seven colors she liked best—violet, indigo, blue, green, yellow, orange, and red.

The bridge looked like a great bow, and it reached from heaven to earth.

When it was let down it was fastened to the earth by a great pot of gold.

Many boys and girls have searched for this gold, but no one has ever found it.

Sometimes Iris comes down to earth in the morning, and then the children sing:

"Rainbow in the morning!
Now, sailors, take warning!"

Sometimes she comes in the evening.

Then the children sing:

"Rainbow at night
Is the sailor's delight!"

When Hiawatha saw Iris' bridge in the sky, he whispered, "What is that, Nokomis?"

And the good Nokomis answered:

"'Tis the heaven of flowers you see there,
All the wild flowers of the forest,
All the lilies of the prairie,
When on earth they fade and perish,
Blossom in that heaven above us."

Rhœcus

Literature Series, No. 11.

Flora J. Cooke

One day as Rhœcus was walking through a forest, he saw an old oak tree just ready to fall. "That fine tree shall not fall if I can help it," he thought. He found a prop and placed it under the tree.

As he turned away he heard a low, sweet voice calling, "Rhœcus! Rhœcus!" He listened. "It is only the wind," thought Rhœcus. But soon he heard it again nearer than before, "Rhœcus! Rhœcus!"

There in the shadow of the tree stood a beautiful maiden. She was the Dryad of the tree, who could live only as long as the tree lived.

The Dryad told Rhœcus that he had saved her life, and bade him tell her what in all the world he most wished for.

Rhœcus looked at the Dryad and saw how beautiful and gentle she was. "Be my friend and never leave me," said he. "That is my greatest wish."

The Dryad said, "Come back at sunset and you shall have your wish."

Rhœcus joyfully said he would come, and hurried away to the village.

There in his play with his mates he forgot all about the Dryad.

But the Dryad did not forget, and as it grew late, she sent her messenger, the bee, to Rhœcus.

Rhœcus did not know that the Dryad had sent the bee, so when it kept buzzing about his face, he grew angry with it and said, "Does it take me for a rose?" And when it came again, he struck it roughly with his cap and bruised its wing. It flew slowly away toward the forest.

As Rhœcus looked after it he saw the red light of the setting sun. Then he remembered his promise and ran swiftly to the tree. But he could not find the Dryad. He called her again and again.

At last he heard her sad voice, saying: "Alas, Rhœcus! I can never see you again. I sent my messenger for you. You were unkind to her. Dryads can only come to loving hearts, and be seen by gentle eyes."

Rhœcus waited in the forest a long time. The moon came up. Then Rhœcus went sadly home. He never saw the beautiful Dryad again.

The Kindergarten

(OUTLINE FOR MAY AND JUNE)

Anne Elizabeth Allen

The Miracle

Without my window lies a dreary waste;
The ground is bare, the skies are gray;
The morning sun displays its usual taste,
And fails to shine on such a day.

So dark, indeed, the gray earth seems to me
Like some sad, tuneless, tasteless thing,
Uncared for, left to die, let be
By sun and warmth to what King Frost will bring.

Without my window, lo! a miracle appears;
Where once was bare earth, trees all hoary,
A wondrous world of rarest beauty rears
Its marvelous wealth of hidden glory.

All hail! the newborn infant Spring
Awaits your joy, your ever-welcoming breath.
She bids you rise, lift voice and sing;
The earth has risen again from seeming death.
—*A. E. A.*

Response to Calls

With the thought in mind that nature can do more for the education of children than any amount of indoor teaching, we shall spend most of our time during these two months at the lakeshore and in Lincoln Park.

Our correlating center will be the response of all nature to the call for action by the sun, rain, and wind, and we shall closely watch the quiet influence, day by day, of these forces on plant life.

Observations of the birds will be made, and their songs and calls imitated, and if possible interpreted. The wind in the trees, the roaring of the surf, and all the sounds of nature we shall try to open our ears to, and learn to imitate. The lake as a transporting body, with its coasts guarded by life-saving stations and lighthouses, its shores protected from the waves, and sending out its artificial landings; its sailboats and steamboats, with their adaptation to conditions of wind and wave, and their signals, we shall be able to see and watch. Our games will be played in the park, and every plan made to spend as little time as possible in the schoolhouse.

1. Response to calls indoors: School-bell, triangle, piano, voice, sun, rain, etc.

Interpretation of calls. What do all these calls mean?

2. Response to calls in the park:

(a) To call of sun—grass, trees, flowers, ourselves.

(b) To call of wind—as waves, grass, trees, clouds, weather-vanes, boats.

(c) To call of rain—plants, waves, umbrellas, overshoes, rain-coats.

(d) To call of sounds—birds, children, life-saving people.

(e) To signals—lighthouse keeper, life-saving crew, sails of ships (by turning with the wind), weather-vanes.

3. Response of man to calls: Building of lighthouses, breakwaters, life-saving stations, putting sails on ships, building long piers into the water.

Materials: Large blocks, sand, paints, blackboards, fifth and sixth gifts, sticks and beads.

Large blocks, fifth and sixth gifts—building lighthouses, piers, life-saving stations, breakwaters, etc.

Sand—representing lakeshore and action of winds and waves; with blocks, building protecting breakwaters. Selected parts of the park modeled in the sand, showing relative positions of different parts to each other, and also from time to time changes in its appearance.

Games: Boats (see March COURSE OF STUDY); growing of plant life represented; bird life; movement of waves against a breakwater; wind games; sun games; butterflies, etc.

Stories: *Sleeping Beauty; Bluster, Bright, and Sprinkle* (see April number of COURSE OF STUDY); *Carl and Ponto; Nature's Seed Cradles* (see June number of the COURSE OF STUDY).

Songs: *Summer Song, The Bees' Market, The Sunshine's Message,* Hill's Songs; *Mr. Rooster Wakes up Early in the Morning* and *Pit-a-pat,* Gaynor's Songs; *To the Great Brown House, In a Hedge,* Smith's Songs, Part I; *Rain Coach,* Smith's Songs, Part II; *Dandelion Fashions,* Smith's Songs, Part II.

Instrumental Music: *Five Marches for the Kindergarten,* Eleanor Smith; *Instrumental Characteristic Rhythms,* C. L. Anderson; *Musical Rhythms for the Piano,* A. D. Scammel.

First and Second Grades

Harriet T. B. Atwood

Nature Study: I. Planting of the garden. Owing to the temporary quarters of the school, it seems advisable in order that the children may see the outcome of their work, to plant only such vegetables and flowers in the garden as will mature during the spring quarter. The children's motive in the work will be to provide certain relishes for the daily luncheon, and flowers to be used in decorating the tables. (See Miss Cooke's outlines for April, May, and June.)

II. Study of animal life in Lincoln Park, and in regions visited during field-trips.

1. Painting or sketching of the various animal forms in their natural surroundings. The animals which will probably be most easily observed in the park during May are: (a) our common birds, fish in park lagoons, earthworms, and ants; (b) wild animals confined in the zoölogical gardens.

2. Study of the food of the animals observed, and their ways of obtaining it.

3. Homes and means of protection of the animals studied.

4. Social habits of the various animals.

III. Study of the May landscape by means of water-color sketches. Color records of changes taking place in the trees which were chosen for continuous study throughout the year.

Geography: I. Study of areas visited on field-trips.

II. Classification in the mineral boxes made by the children, of all soil specimens and stones collected on trips.

III. Field-trips—proposed:

1. Visit to the ravine at Lakeside, and the prairie west of Lakeside.

2. Visit to truck farms between Chicago and Evanston.

3. Visit to swamp region south of Eighty-third Street, near Stony Island Avenue.

Art: Painting of animals in their native environments. Modeling of birds and bird-homes. Painting of the May landscape. Color record of bud development, and growth of plants in hotbeds. Painting of spring flowers and other perishable specimens collected on field-trips. Illustration of stories by means of chalk-modeling, painting, and paper-cutting.

History: As the making of dishes was continued in April, the study and casting of agricultural tools could not be completed during that month. The history work for May will therefore be the continuation of work begun in April. (See history plan for April.)

Literature: Whittier, *King Solomon and the Ants;* Saxe, *King Solomon and the Bees; Stories the Sunshine Told,* adapted by Gudrun Thorne-Thomsen; Browning, *The Cricket and the Poet.*

Manual Training: Making of garden stakes. Completion of kites and boats begun in March.

Industrial Art: Weaving of May baskets.

Domestic Science: (See Miss Cooke's outline.)

Correlated Number: Planning of school hotbeds and garden. Calculating the amount of wire needed to inclose the garden. Inking of garden stakes to show depth to which they must be driven. Making of a measuring-rod marked off in centimeters to use in planting seeds and transplanting seedlings from the hotbed. Calculation of force exerted by seedlings in swelling. (See experiments in Miss Cooke's outline.)

Speech, Oral Reading, and Dramatic Art: I. Phonic games. Exercises in articulation based on Bell's vowel table.

Dramatization of bird stories familiar to the children.

II. Poems to be memorized:

1. *The Merry Brown Thrush,* by Lucy Larcom.

2. *The Wind,* by R. L. Stevenson.

Music: (MISS GOODRICH.) The work for this month will be a continuation of the spring songs planned for April.

Reading: March COURSE OF STUDY, *Sunshine Stories.* May COURSE OF STUDY, *Insect Stories.* Selections from Chase's *Birdland* and Bass's *Animal Life.* Texts of songs: Selections from various First and Second Readers bearing upon the spring subjects.

Writing, Spelling, English: Recording of observations in the spring calendar. Written descriptions of birds and flowers for guessing games. Writing suggestions as to the dramatization of stories. Placing of words in dictionaries. Labeling of specimens in mineral boxes.

Physical Culture: (MISS CRAWFORD.) A full account of the work in physical culture for these grades will appear in the June number of the COURSE OF STUDY.

References: Jordan and Kellogg, *Animal Life;* Comstock, *Insect Life;* Chapman, *Handbook of Birds of Eastern North America;* Neltje Blanchan, *Bird Neighbors;* Chapman, *Bird Life* and *Bird Studies with a Camera;* Dugmore, *Bird Homes;* Wright and Coues, *Citizen Bird;* Coulter, *Plant Relations and Plant Structures;* Davenport, *Introduction to Zoölogy;* Jackman, *Nature Study and Related Subjects* and *Nature Study.*

Third and Fourth Grades

Gertrude Van Hoesen

Nature Study: The relation of the leaves, stem, and roots to the whole life of the plant.

I. Germination of many seeds.

1. Parts developed: (a) roots; (b) stems; (c) leaves.

2. Source of food for the plantlet in the seed. What is this food? Test for starch. Under what conditions is this food available?

II. Needs of the growing plant—water or moisture, heat, air, light, and soil. Under what conditions must the seed be placed to continue growth after it has exhausted the food stored?

1. How does the plant obtain water?

EXPERIMENT. Place a small plant with a well-developed root and several leaves in a small opening made in a cork, so that the roots are below and the leaves above the cork. In a bottle place a definite amount of water which has been colored. Fit the cork into the bottle and seal carefully with paraffine. Set the plant in the sunlight and leave it untouched for twenty-four hours. How can we tell that the roots have been drinking the water?

2. What becomes of all of the water?

Take another plant similarly fixed, and weigh carefully before placing it in the sunlight. Weigh again the next day. What is the loss? How did the water get out of the bottle when it was sealed?

To answer this question, place over the plant a glass beaker for a few hours. Soon a film of moisture will cover the inside of the glass.

3. Is the water that is transpired from the leaves of the plants in your garden the same in every way as that which is taken up by the roots?

EXPERIMENT. Take a definite amount of water that has been passed through the soil used in the garden. Evaporate it upon a glass. Evaporate an equal amount of water that has transpired from the leaves of the plant. Which leaves a residue? Test residue for constituents. What becomes of this residue in the plant?

To answer this question, dry a plant grown under the same conditions, and burn until only the ash is left. Test ashes for constituents. Do these tests answer the question?

4. What else are the leaves giving off besides moisture?

EXPERIMENT. Submerge an active leaf in water in a glass vessel and expose to light. Bubbles may be seen coming from the leaf surface and rising through the water.

Remove from the light and note the result. Note carefully when the bubbles cease. Bring back into light. Collect gas in a test-tube and test for oxygen. Compare with our own respiration. What do we inhale? What do we exhale? How does this compare with the respiration of the plant?

Geography: THIRD GRADE. The study of the illumination of a large city: (1) Street lamps. (2) Gas. (3) Electricity.

Experiments will be given in the laboratory showing in a simple way how gas is made. This will be followed by an excursion to a gas-plant.

The class has been studying electricity during the last month. Excursions will be made to the electric-light plants in the city.

Compare the advantages of one mode of lighting over another, both in the house and on the street. Compare cost of each.

FOURTH GRADE. The Mississippi Basin. This will be studied both industrially and structurally, the study of structure being necessary to explain the industry.

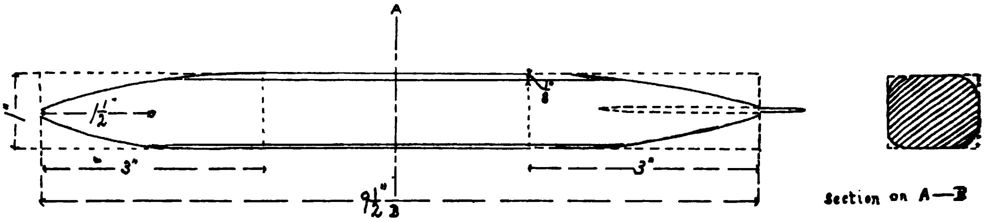
History: THIRD GRADE (MRS. THOMSEN). Miss Champlain's plans in sloyd will show the work in history for the month. Whenever a closer study of the objects to be made is required, the children will study pictures and read descriptions. They will also keep a written record of the work they are doing, for the benefit of succeeding classes.

FOURTH GRADE. A continuation of the study of social condition of the Italians as outlined in the last number.

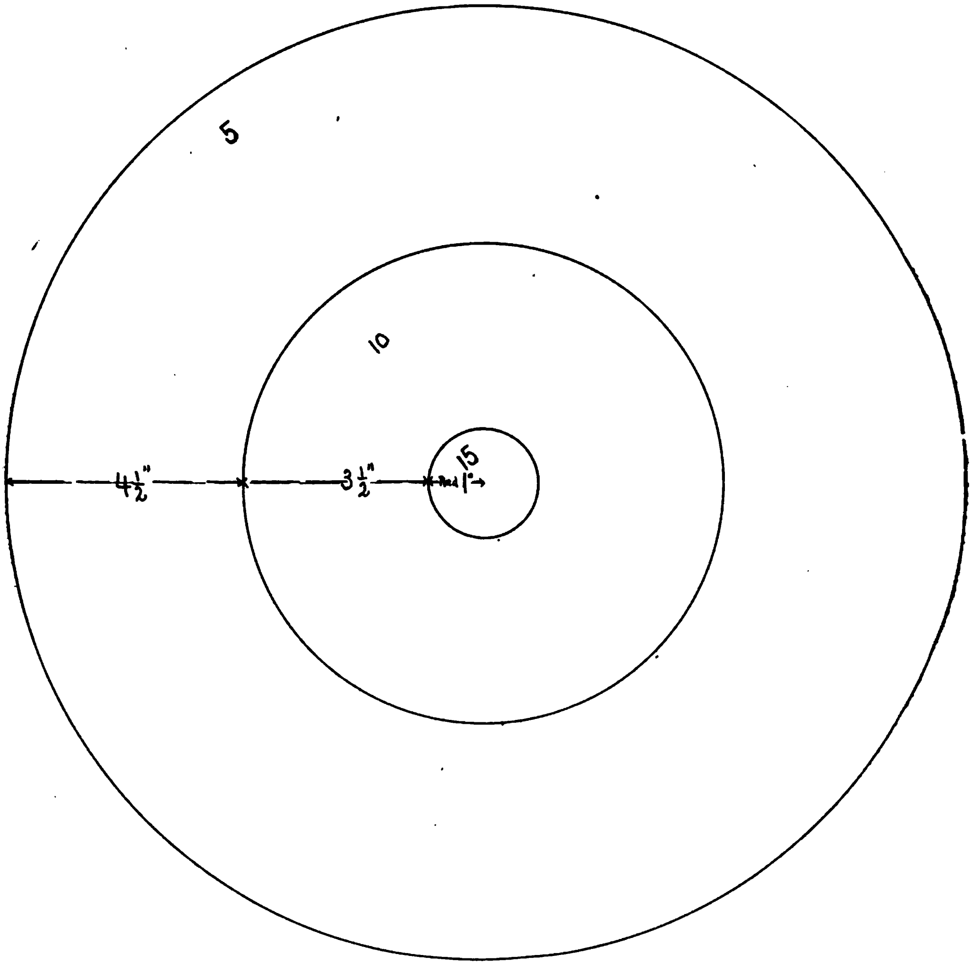
Manual Training: THIRD GRADE. (MISS CHAMPLIN.) In connection with the history, the children are making some of the Greek games, also shields and spears, and later will make the suits of armor, helmets, and chariots. The accompanying drawings show what the children made during April.

The target may be made of soft wood, sufficiently thick to allow the point of the dart to pierce it deep enough to hold it securely till the record of each child, in turn, is made. Straw, bound closely, and covered with burlap, may also be used, or sheets of cork.

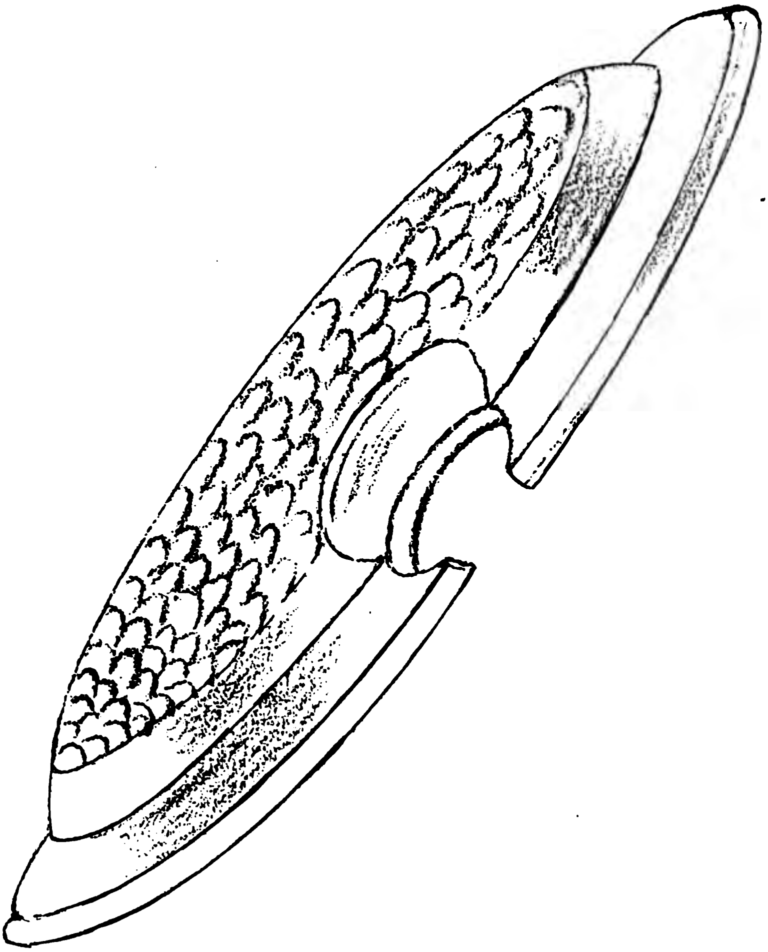
The center, or bull's-eye, is painted one color, and counts 15 for each dart which comes within its limits; the second band, which is a different color, 10, and the outer one, which is the widest, 5. Each child in turn takes all the darts and throws them, standing several feet from the target.



DART



TARGET



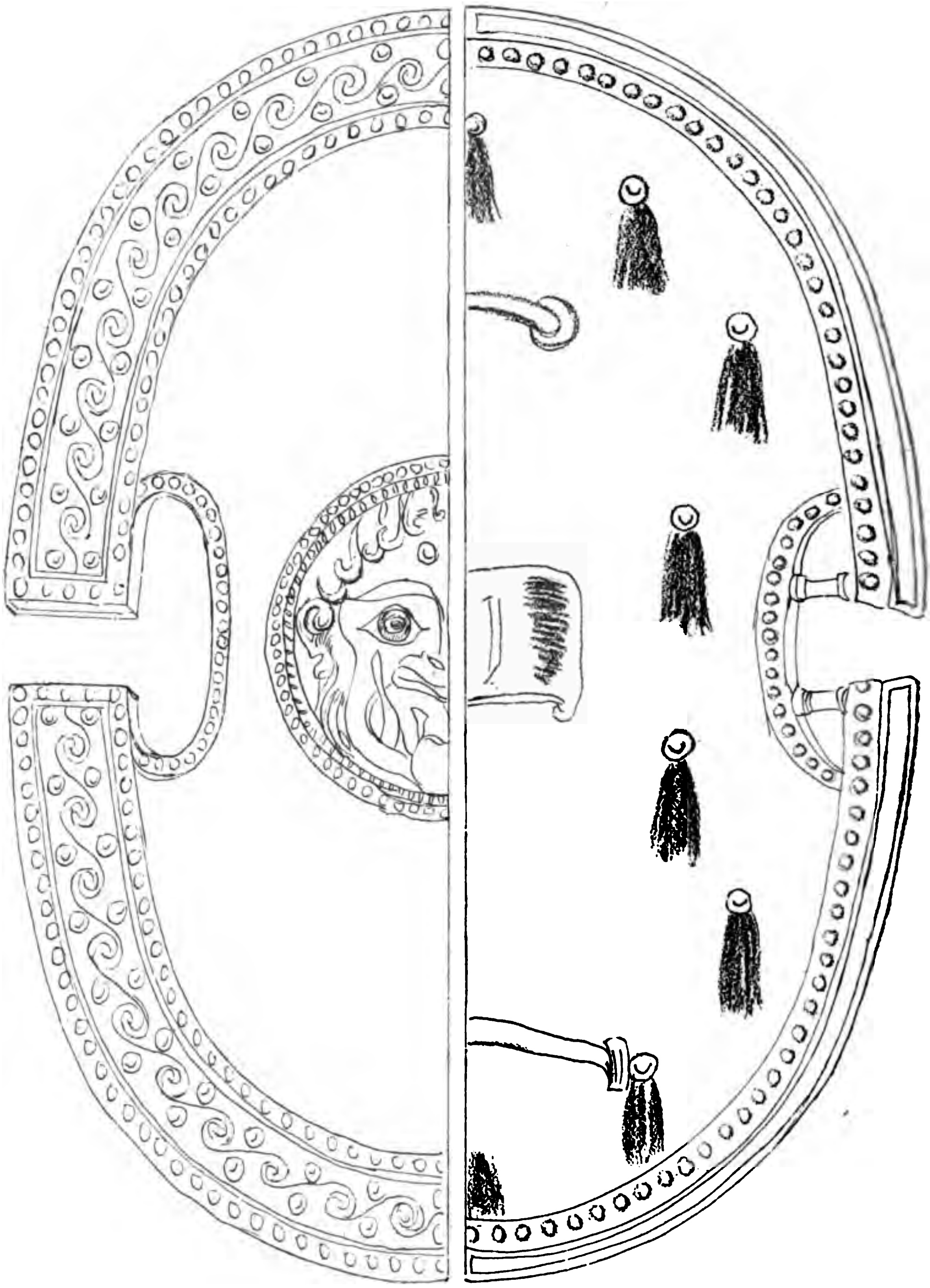
SHIELD

The darts are made of pine, with a heavy carpet-needle inserted in one end, to serve as point, protruding about three-fourths of an inch. At the opposite end four feathers are inserted at regular intervals, one and one-half inches from the point.

The shields are suggestions, both in design and decoration. They will be made of soft wood with the ornamentation painted upon them, and stained to represent leather or metal. The dimensions will depend upon the size of the child who is to use it—not more than two feet long, and a proportionate width. A leather strap, or, if preferred, a wooden handle, may be fastened to the back.

The spear-heads will be cast in bronze, the children making the models in wood, and also making the flask for the casting. The handles, of course, will be of wood. Each child will make his spear as long as his height.

Third and Fourth Grades. In their regular manual training work the children will be allowed to make anything they choose and are able to independently plan. The last requirement makes it possible to give them this privilege at the end of the year.



SHIELDS

SPEAR

Music: A continuation of the work planned in April.

Art: Illustrations of scenes in history, geography, and literature, in drawing, both pencil and crayon, and in painting. In clay, records of germination and spring flowers.

Industrial Art: The children are weaving curtains for a miniature theater; the material used is wool-roving. Each curtain is made of three strips, seven inches wide, woven on the hand-looms. They are joined together and decorated with embroidery stitches. Some of the children are designing the drop-curtain. The design is not yet completed. It will be worked in cross-stitch on coarse canvas.

Literature: Stories of Cimabue, Giotto, Luca della Robbia, Raphael, and other great Italians.

French: (MLLE. ASHLÉMAN.) A trip will be taken to Thatcher's Park, River Forest, during May, in search of violets and other spring flowers. At luncheon stories will be told in French about the flowers gathered. The reading lesson, *Le Club Bouquet Fleuri*, which is given below, will afterward be dramatized by the children. (These reading lessons, when dramatized, are subject to changes made by the children themselves.) The pupils of the Seventh and Eighth grades will make tissue-paper flower costumes for the Third and Fourth grades to use in presenting their play.

The children have learned to Sing *La Bergère* (The Shepherdess), and during this month they will be given the following riddle to guess, the answer being, "la bergère."

Enigme

"Je suis dans les champs, à la ville,
  A la ferme et dans le palais;
Mes sujets, d'allure tranquille,
  Ne commettent pas de forfaits;
Dans les bals je suis à la mode,
  Quoique démodée, et pourtant
Je suis une chose commode
  Pour le repos d'un grand parent."

Bouquet Fleuri

Scène Première

Le Rouge-gorge (*à Babette sa femme*). Nous sommes invités à chanter au club "Bouquet Fleuri" cette après-midi. Les membres de cette société raconteront une anecdote relative à leur famille. Je me demande, Babette, quelles sont les plus belles fleurs? Ne trouves-tu pas, qu'après le mois de mars nous avons une succession de fleurs qui nous donnent une superbe fête?

Babette. Moi, je les aime toutes. Quand je vois la gentille *Perce-Neige* sortir de la terre longtemps avant que les arbres même

osent montrer leurs petites feuilles, je lui dis, " Ma chérie c'est toi que j'aime."

Quelques jours après je trouve la petite *Fleur du Safran* si faible, si timide. J'ai pitié d'elle, et je lui chante aussi une chansonnette pour lui faire oublier le vent. Tout en chantant il me semble que c'est elle qui est la plus belle parmi les fleurs. A peine ai-je fini de chanter qu'un parfum exquis m'attire, et voilà l'aimable *Violette* qui cause avec la brillante *Primevère*.

Maître Rouge-gorge. En effet, Babette, tu as raison; tu as presque toujours raison, ma petite femme.

Babette. Maître Rouge-gorge, regarde donc ce rayon de soleil. Si tu ne te dépêches pas, nous arriverons trop tard au club "Bouquet Fleuri."

Scène Deuxième

(Maître Rouge-gorge et sa femme sont perchés sur une branche. Ils écoutent attentivement les anecdotes du club " Bouquet Fleuri.")

Anémone. Abandon voilà mon autre nom. Voulez-vous savoir pourquoi je suis livrée sans défense aux dures caresses de Borée, et pourquoi je fleuris avant le printemps? Eh bien, j'étais la plus belle parmi les nymphes qui ornaient la cour de Flore. Vous savez que Zéphyre et Borée sont toujours en guerre.

Malheureusement pour moi, ils se mirent à m'aimer tous deux. Flore découvrit que j' étais sa rivale dans le cœur de Zéphyre. Elle me changea en une plante qui fleurit avant le printemps, et Borée parceque je ne l'aime pas m'agite, m'entr'ouvre, et de dépit, me fane et disperse souvent mes pétales au loin.

Babette (*essuyant une larme*). Pauvre Anémone, je viendrai souvent te chanter mes plus gaies chansons.

La Pervenche. Les doux-souvenirs, voilà mon symbolisme parmi les hommes. Probablement ce sont mes fleurs d'un bleu de ciel assez vif qui éveillent les souvenirs.

J'ai honte de ne pouvoir vous raconter une histoire. Pourtant je suis fière d'une chose; j'étais la fleur favorite de Jean Jacques Rousseau.

Maître Robin. Un grand poète t'a chantée—Chateaubriand. Ecoutez. (Il se met à chanter.)

> " Te souvient-il de cette amie
> Tendre compagne de ma vie—"

(Il s'arrête). Miséricorde! j'ai oublié la dernière partie.

(*Daphné-Bois-gentil.*) J'aime plaire à tout le monde. On dit que je suis coquette. Je suppose que c'est parceque je me pare de ma robe rouge de printemps au milieu des neiges. Je vais vous dire un secret: dans mon écorce je renferme un principe vésicant qui est d'un emploi fort dangereux.

Primevère. Oh, Daphné! j'ai honte de toi! Quel horrible secret. Voici ce qu'un poète dit à mon sujet:

> "La primevère sort de l'herbe,
> Déployant ses grappes en fleurs.
> Que lui sert son luxe superbe?
> La pauvrette n'a pas d'odeur."

La Tulipe. Moi, non plus je n'ai pas d'odeur. Pourtant parmi les Turcs, c'est la marque de la plus haute estime que de m'envoyer en présent.

En Orient, je suis regardée comme l'emblême du printemps. C'est au mois d'avril que se célébre ma fête, "la fête des Tulipes."

On construit dans la cour du sérail des galeries en bois, et l'on dresse des bancs sur lesquels on range en amphithéâtre une quantité prodigieuse de carafes garnies de mes sœurs.

Ces vases sont entremêlés de flambeaux, et sur les gradins sont placées de belles cages remplies d'oiseaux. De distance en distance de grosses boules de cristal contiennent des essences de différentes cou-

leurs. Au centre de la cour est le pavillon du sultan, devant lequel sont étalés les présents que les grands dignitaries offrent à sa Hautesse. La musique et les danses terminent cette fête.

Maître Rouge-gorge. Dis donc, Babette! Il nous faut aller en Turquie voir cette fête.

Babette. Oui, mais pas cette année. Mademoiselle Violette, n'avez vous rien à dire? Je vais vous chanter une chanson avant de partir.

Violette. Les Grecs et les Celtes disent que je suis l'emblême de l'innocence et de la virginité. J'ai toujours décoré les cercueils de leurs jeunes vierges.

On prétend aussi que Vénus, qui est très belle, après avoir épouser le laid Vulcain ne voulait pas le suivre. Alors Vulcain s'est fait une couronne de mes sœurs, et la belle déesse, charmée de leur doux parfum sourit à Vulcain et écouta ses protestations d'amour.

Babette et Rouge-gorge (*se mettent à chanter*).

"Quand Flore, la reine des fleurs,
Eut fait naître la violette
Avec de charmantes couleurs,
Les plus tendres de palette,
Avec le corps d'un papillon
Et ce délicieux arôme
Qui la trahit dans le sillon;
'Enfant de mon chaste royaume
Quel don puis-je encore attacher,'
Dit Flore, 'à ta grâce céleste?'
'Donnez-moi,' dit la fleur modeste,
'Un peu d' herbe pour me cacher.' "

Fifth Grade

Willard Streeter Bass

NOTE: Part of the work outlined below was done in the month of April.

History: The subject for the month will be the French in North America. The following topics will be considered:

I. Discoveries and early explorations.

II. Industrial and social character of the colony.

III. Expansion of the colony through the entire St. Lawrence and Mississippi river basins.

IV. Points at which this expansion met the growth of the English colonies.

V. The conflict between the French and English.

Stories will be told which best typify the spirit, methods, and aims of the French explorers, and which are of most importance in establishing the claim of the French to the territory which they occupied. The stories selected are Champlain's first trip to the lake which bears his name and his fight there with the Iroquois, Joliet's and Marquette's discovery of the Mississippi, and La Salle's journey to the mouth of that river.

Besides the love of exploration which the sixteenth-century Frenchman possessed to a remarkable degree, three motives animated the French in the efforts to colonize the New World. They were the establishment of a transatlantic French empire, the conversion of the Indians, and the acquisition of wealth through the fur trade. Every French settlement contained some expression of these motives, and the children will take a typical settlement, such as the mission at Michilimackinac, and study its life and organization with some minuteness. The home life, industries, architecture, and government will be compared with that of the English colonies studied earlier in the year.

The extent of the English and French

colonies in 1745 will be studied, and the great importance of the Appalachian Mountains in separating the two constantly expanding civilizations will be observed. The geography of the region will be studied and the points of strategic importance determined. The children will see that the control of the natural passageways from the east to the west will be of primary importance, and that the points which control these routes will be desired by both sides. Such points are: Niagara and the fork of the Ohio, controlling the routes to the great West; Lake Champlain, controlling the easiest and most direct route to Canada, and Quebec, the gateway to the whole of the French possessions.

The study of the final conflict should be the study of the struggle for the four strategic points named above. The story of Braddock's expedition against Fort Duquesne will be told, and the valuable services of Colonel Washington included. The final capture of the fort by Forbes in 1758 will also be told. The attempt of the English to take Ticonderoga in 1758, their defeat, and their success in the following year, will next be told. The almost simultaneous success of the English at Niagara will be noted, but attention of the class will be centered upon the dramatic struggle of Wolfe and Montcalm for the possession of Quebec. The situation of Quebec and its natural defenses will be made as vivid as possible. The long struggle of the English to gain a position on the heights and their despairing condition, the last desperate attempt, the battle, and the death of the two generals, will all be described as vividly as possible, and the children made to realize the heroism displayed by both French and English.

Art: The most picturesque scenes which may be considered representative of great movements will be described to the children with as much detail and vividness as possible. Pictures of costumes, architecture, boats, and landscapes will be shown whenever available. The children will then represent their conceptions of these scenes in blackboard drawings, water-colors, or clay. The scenes selected for this purpose are Champlain at the battle with the Iroquois, the mission at Michilimackinac, La Salle raising the cross at the mouth of the Mississippi, Washington at Braddock's defeat, Montcalm at Ticonderoga, Wolfe ascending the heights at Quebec.

Writing: The class will write out the story of every important event which is told or read to them, and an attempt will be made to have this series of narratives when finished form a fairly connected story of the French in North America.

Constructive Work: The class will construct a model in pasteboard, wood, etc., of a typical French settlement, selecting for this purpose either the mission station at Michilimackinac or the Indian village at Starved Rock.

Oral Reading: Selections from *The Seats of the Mighty*.

References: Hart, *Source-Book of American History*, pp. 96-98, 103-104, 105-107. Winsor, *Narrative and Critical History of America*, Vol. IV, pp. 103-316, especially pp. 120 and 243, Vol. V., especially Chapter VIII; Bourinot, *Canada;* Fiske, *The Overthrow of French Power in America*, Harper's Magazine, Vol. LXV, pp. 99-112; Parkman, *Pioneers of France in the New World*, pp. 346-360, *La Salle and the Great West*, Chapters III, V, X, XVI, XX, and *Montcalm and Wolfe*, Chapters V, VII, XX, XXII, XXV-XXVII; McMurry, *Pioneer History Stories of the Mississippi Valley*.

Geography: The subject for the month will be the study of the regions of North America discovered and colonized by the French, and of the location and topography of the strategic points about which the principal struggles of the French and Indian War occurred. The work will in general be kept slightly in advance of the work in history, and will furnish a background for the historical narrative and a clew to the cause of many important events.

The class will first review the work which they have done upon North America as a continent, and will model it in sand. The maps should show the two great slopes of the continent, the interruption of the eastern slope by the Appalachian Mountains, the great central plain divided into the great river basins of the Mississippi, the St. Lawrence, and the Mackenzie and rivers flowing into Hudson Bay.

The basin of the St. Lawrence will then be studied in detail. The topography of the region will first be considered, and the children, gathering their information from maps, pictures, reading, and especially from large blackboard and sand maps made by the teacher, will model the region in sand and trace on it the routes of the early explorers, Cartier, Champlain, etc. Pictures of the most striking scenic features will be shown and drawn by the class, and some time will be spent in the study of Niagara Falls, their appearance, their cause, and their probable future.

The Great Lakes will furnish the next topic. The method of their formation will be considered in the light of the work done last fall on glaciers. The great size of the water surface in proportion to the area drained will be noticed, and attention given to possible sources of the water supply. Lastly, the climate and soil, the vegetable and animal life which these determine, and the influence of them all upon the French settlers will be considered.

The basin of the Mississippi will then be studied in the same manner. The work of erosion, the flood plains, the delta, will be noticed and compared with the corresponding features of the St. Lawrence. The children will model the river basin in sand and trace out the routes of Marquette and Joliet, and of La Salle, locating and modeling with greater care the places of their more important adventures. The soil and climate will then be compared with those of the St. Lawrence basin. The causes which produce the difference in climate, such as distance from the equator, the returning trade winds, the polar current, will be sought for, and the effect of the differences in both soil and climate upon the early settlers and later commercial development will be considered.

The Appalachian Mountains, which formed the great barrier separating the English from the French, enabling each to obtain a firm foothold in America before coming into conflict with the other, will be the next subject for discussion. The character of the highland and of each of its slopes will be studied in detail. The lowest points in the range will be noticed, and their importance in forming the easiest routes of travel from east to west emphasized. The points which control these routes will be determined, and the children will be asked to select the points for whose possession they think the great struggles between the French and English will occur.

The topography of strategical points such as Quebec, Ticonderoga, and Niagara will be studied in detail by means of pictures and descriptions, and will be drawn or modeled by the pupils.

References: Carpenter's Geographical Readers, *North America*, pp. 135-143, 150-159, 172-179, 195-203; 306-327; Tarr and McMurray, *North America*, pp. 234-238, 351-370, 26-38.

Nature Study: METEOROLOGY. The weather record will be continued as in previous months. The construction and use of the rain-gauge will be discussed this month, and a record of the rainfall kept. The average rainfall for this month will be found from the government records, and compared with the amount of the present year. The observations with the skiameter will be continued, and the area of level ground covered by a beam of sunshine of given cross-section compared with that covered by a beam of the same cross-section last month, while the average temperatures of the two months will be compared at the same time.

BOTANY. The work for the month will be a study of germination. The class will plant various kinds of seeds, such as corn, beans, peas, grains, grasses, etc., in various conditions, and observe and record their growth by means of drawings and paintings. They will attempt to discover under what conditions of heat, moisture, light, soil, and air, germination is possible.

They will also plant the roots of several biennials, such as carrots and parsnips, and observe and record the manner in which growth begins from these.

They will continue to observe the growth of the buds on trees, and make frequent paintings both of the appearance of the buds and of entire trees. Each pupil will take a single tree and watch with especial care its growth throughout the season.

PHYSICS. The great work done in nature at this time by heat makes a means of accurately measuring temperature very necessary. The class will therefore perform a few experiments to enable them to understand the principle upon which the thermometer is based.

Each pupil will take a small glass bottle, fill it with water, insert in the top a stopper through which a piece of glass tubing eight or ten inches long has been passed. He will then immerse these in larger vessels of cold and hot water, and watch the effect upon the water in the tube. This will show the principle of the ordinary thermometer.

The principle of the air thermometer may be shown by putting only a little water in the bottle, and making the glass tube extend nearly to the bottom of the bottle. The pupil should now place this apparatus in cold and hot water, watch movement of the water in the tube, and compare the sensitiveness of this apparatus with that of the water thermometer.

Painting: In no way can the record of the changes in the germinating seed and in the outdoor world be so quickly and accurately made as by color; hence the pupils will have almost daily recourse to their colors for the purpose of making some of these records.

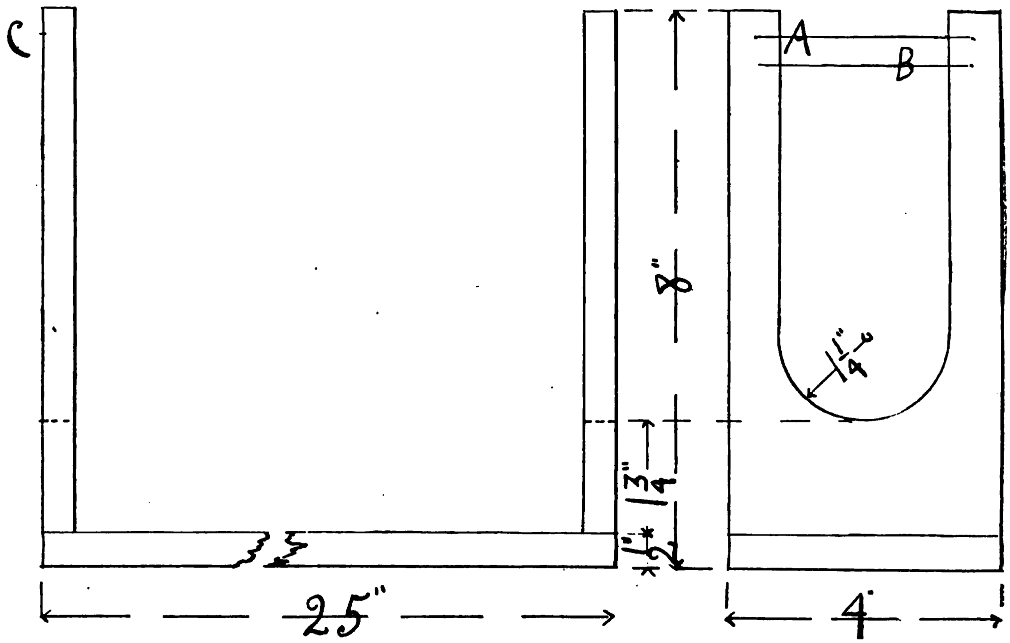
Writing: Such of the records as cannot be wholly told by painting or drawing, e. g., the inferences drawn from an experiment, will be kept in writing.

References: Hammel, *Observation Blanks in Physics*, pp. 29–31; Jackman, *Nature Study in the Grammar Grades*.

Number: The problems previously described necessary for interpreting results of skiameter and temperature observations will be continued.

The class has found that moisture is an essential for plant growth. They will record the rainfall, and compute and measure out the quantity of water falling on a four-inch square during the month, comparing it with the average of the last thirty years.

The Fifth Grade will also assist in the work of surveying in Lincoln Park under the direction of the mathematics department. Their work will consist of measuring straight lines by chaining and of angles with the plane-table, and plotting the measurements to scale. They will also use the home-made stadia to measure distances which cannot be chained. The construction of this apparatus is described below. The method of its use is as follows:



STADIA

Stock, ⅝-inch pine; A, B, C, threads; A and B are ¼ inch apart; A and C, ¼ inch from top of uprights.

By looking through the back slit between the strips at *C*, first toward the upper thread, *A*, and then at the lower one, lines of sight may be directed toward a remote object at such an angle with each other that the distance of the object sighted will be 100 times as great as the length of the part of the object included between these lines of sight. Measuring the space, therefore, the distance of the object becomes at once known, and vice versa.

Manual Training: The class will work in twos, and every two will make a simple stadia for use in surveying, in accordance with the following directions:

From surfaced inch-stuff, cut two pieces according to the dimensions given in the drawing. To one attach two strips of tin or brass, as shown at *C*, and to the other fix two parallel black threads ¼ inch apart as shown at *A* and *B*. From the same stuff cut, square, and surface a board 25 inches long, and nail the former two pieces to the latter.

Music: (MISS GOODRICH). *May Song*, Modern Music Series, Third Book; *Song of May*, *The Wood Birds*, Modern Music Series, Second Book; *Sword Song*, Songs of Life and Nature.

The *Sword Song* may prove expressive of the chivalric, adventurous spirit of the French explorers and men-at-arms of the period which the history of this month will develop. Considerable time will be spent upon the religious and patriotic songs for Decoration Day exercises.

Sixth Grade

Edith Foster Flint

Geography: The subject for the month is the British Isles. This subject both follows closely on that of the preceding two months — Europe — and serves as a background, and, in some ways, an explanation, for the literature studied at this time.

The children will notice the configuration of the island-group, and its nearness to the mainland, and will be told something of its previous connection with the continent. Then upon an outline map, upon which nothing but coast-lines and rivers are shown (the language map on page 24 of Longmans' *New Atlas* will serve in default of a larger), they will note:

1. The shore-lines.
2. The rivers—their length and direction.
3. The latitude.

They will at once notice:

1. The sharply indented west coast of both Great Britain and Ireland.
2. The flow of the majority of the rivers of Great Britain to the east. Without reference to a physical map they will infer from (2) that the watershed in Great Britain is, in general, close to the Atlantic side. This inference will be confirmed by reference to appropriate maps.

Bearing in mind now the slope of the land, the children should be able to reason out one cause of the sharply indented west coast—rapid erosion down steep slopes. The other cause — subsidence —they can also work out, with assistance, and with the help of the geographical laboratory in the basement.

After this they will consider the matter of climate, and will note that the country situated between the same parallels of latitude on our side of the ocean is Labrador, an extremely bleak region. The cause of the great difference in temperature—the Gulf Stream—will then be discussed. Just how this current, in conjunction with the mountains and lowlands of the island, affects their temperature and rainfall will be worked out, and its importance to the scenery, agriculture, and social life of the region demonstrated.

Finally, the situation regarding slope, rainfall, and coast-line being in hand, the class will consider the subject of river-erosion. The treatment will follow the main heads of the outline for the Eighth Grade in the COURSE OF STUDY for October.

The fact that the Celts, of whom Arthur, mythical or real, stands as the exemplar, were driven by the Saxons, who landed easily in the east, always to the mountains, will serve to make vivid to the children the idea of the highland and lowland regions.

References: Longmans, *New Atlas;* Mills, *International Geography; Encyclopædia Britannica*, articles on *England, Ireland, Scotland.*

Nature Study: (See outline for Seventh and Eighth grades.)

Number Work: The number work will be based on the geography and nature study.

Literature: It has already been pointed out (COURSE OF STUDY for April) that the history subjects for the Sixth Grade have, up to this time, been deficient in literary material suited to the needs of the grade.

In order to restore the balance, therefore, the time for history this month will be allotted almost exclusively to literature, such history only being introduced as will serve to afford necessary explanations.

Already, during the preceding month, considerable time has been spent in reading and discussing *The Vision of Sir Launfal* and the opening chapters of *Ivanhoe.* These works, and particularly the latter, of course, though written for older heads, have been read with intense interest by the children, and *Ivanhoe* has aided immensely, not only in making real the time of the Crusades, but in giving specific information as to manners, customs, dress, and buildings. Scott's long descriptions, so inartistic from the literary point of view, have been of great help to the children. Before this is printed probably all of *Ivanhoe* will have been read by every child, partly at home and partly in the classroom. Some of the more dramatic scenes, such as *The Tournament* (Chapters VII and VIII), *Robin Hood the Archer* (Chapter XIII), *The Storming of Front de Bœuf's Castle* (Chapter XXIX), and *Rebecca's Champion* (Chapter XLIII), will have been read by the children in class and discussed in detail. If time serves, they will also have read the scene from *The Talisman,* wherein Richard is attended by the Saracen physician, and the scene between Richard and Saladin in Saladin's pavilion. This latter will have been an especially good illustration of the fact that there can be knightly enemies.

For May, the main subject will be the King Arthur legends. These legends, not to be trusted for facts, but of immense value as indications of the manners and ways of thinking of our ancestors—matters more important historically than battles and successions—should be part of the mental furniture of every child. It seems best to take as a text Malory's rendering as simplified by Lanier in *The Boys' King Arthur.* Charles Morris has an edition (pub. W. W. Giddings, London, 1892; 3 vols.) which gives a more orderly arrangement and cuts out repetitions and anachronisms, as well as puts the whole into very decent modern English. But the true flavor is absent, and it would seem better to have the children get as near the actual source as possible. Therefore, Morris and Bulfinch will serve only as reference, and, if necessary, explanation.

The portions of Malory selected for reading will be those dealing with:

Arthur's Coming.
His Sword Excalibur.
His Wife Guinevere.
His Establishing of the Table Round.
Merlin's Fate. (See Bulfinch for Merlin's previous history.)
Lancelot.
The Quest of the Holy Grail.
Lancelot and Elaine.
The Passing of Arthur.

It is probable that the last will be read to the children from Tennyson, for though they are perhaps not old enough to read it understandingly themselves, another could make it both intelligible and effective to them.

References: Morris, *King Arthur and the Knights of the Round Table;* Bulfinch, *King Arthur and His Knights;* Charles Mills, *Chivalry;* Racinet, Vol. IV (for costumes, arms, armor).

Hand-Work: In connection with their study of chivalry and the Crusades the children have been writing an original story about the adventures of a certain Sir Simon de Puttenham, his son Ralph, his daughter Margery, and his gardener's son. The boy goes as a page on a pilgrimage to the Holy Land, the gardener's son acting as his attendant. The difficulties which they and their party encounter have served to show the children one great cause of the Crusades.

This story, then, or an incident from it, each child will write on parchment paper of appropriate size and shape, and will then proceed to make into a book, in this wise: Ornamental alphabets will be found in the library and in books at home, from which each child will choose letters according to his taste, to form the title of his own book—the title to be chosen by himself under criticism, and the letters to be done in color. Then, in painting hours, frontispieces will be done in color, illustrating some important scene or incident. Meanwhile each child will have made a design for a cover, which he will either weave in heavy silks or embroider, as he chooses. When this part of the work has been well started, it can be continued during regular lesson periods, while the teacher reads aloud. Finally, the children will bind the whole into a book. The best production will be voted upon and given to the library.

French: (MLLE. ASHLÉMAN.) The children of this grade have been studying for some time the subject of chivalry. During the month of May dramatic incidents from the life of Louis IX., one of the strongest types of chivalry, will be adapted from the annals of Sire de Joinville, thus relating the history and literature of France. In memorizing and acting out these incidents, the children will get the French ideal of chivalry.

The following charade will be given them to guess:

Charade

"Verbe étant mon *premier*, complément mon *second*,
Si l'on veut accomplir cet acte, sans un pont,
Quand la riviére est grande, il faut beaucoup d'audace;
L'entier est un oiseau que je crois peu rapace."

Saint Louis

"Mieux vaut mourir que mal faire."

[AVERTISSEMENT: Saint Louis devait être le plus digne représentant et le serviteur le plus dévoué des Croisades. La sixième Croisade fut l'œuvre personnelle de Saint Louis, non le fruit d'un élan populaire.

Tous les chroniqueurs du temps, tous les historiens de son règne, ont célébré sa charité, sa piété, et l'ont admiré pour sa bienfaisance. Saint Louis ne se bornait pas à fonder et à dôter des hôpitaux, des hospices, des asiles; il payait de sa personne dans sa bienfaisance et ne regardait aucun acte de charité comme audessous de la dignité royale.

Tous les jours, partout où le roi se trouvait, deux cents pauvres recevraient chacun deux pains ou du poisson pour un repas. Les mères de familles avaient un pain de plus par tête d'enfant. Outre ces deux cents pauvres nourris à l'extérieur, quatre-vingts autres étaient chaque jour introduit dans l'hôtel. Trois d'entre eux se mettaient à table en même temps que le roi dans la même salle. "Maintes fois," dit Joinville, "je vis qu'il leur taillait leur pain et leur donnait à boire."

Lorsqu'il avait déjà vingt-quatre ans quelques-uns de ses principaux vassaux levèrent une armée de croisés. Saint Louis les encouragea et voulut que son connétable servît en son nom dans cette guerre.]

Scène Première

(*Pontoise, 1244.*)

Personnages: Saint Louis, âgé de vingt-neuf ans. Blanche de Castille, sa mère. Marguerite de Provence, sa femme. Robert d'Artois et Charles d'Anjou, ses frères. Guillaume d'Auvergne, évêque de Paris. Pierre de Cuisy, évêque de Meaux. Elite de la noblesse.

Scène: Chambre à coucher royale.

Epoque: Commencement du treizième siècle.

Saint Louis est étendu sur un canapé; sa mère aidée de sa femme le soulève doucement et lui donne à boire.

Saint Louis. Je suis gravement malade, ma mère. (Il regarde sa femme.) Ma

LE SIRE DE JOINVILLE
D'après la statue de M. Bra (Musée de Versailles)

pauvre Marguerite, je crois que ma dernière heure est venue. Qu'on appelle tous mes familiers.

(Blanche de Castille fait signe à Robert d'Artois. Il sort. Quelques moments après les serviteurs du roi entrent et s'agenouillent près de la porte.)

Saint Louis. Ma dernière heure est venue. Je vous fais appeler pour vous remercier de vos bons services, je vous recommande de bien servir Dieu. Faites tout ce qu'un bon chrétien doit faire. (On entend des sanglots.)

Une dame de la cour. Il retombe sur son oreiller sans mouvement. Il est mort! Il me faut tirer le drap sur ce visage adoré.

Une autre dame de la cour. Je vous en prie, ne le couvrez pas, il a encore l'âme au corps.

(Saint Louis soupire, il étend les bras, et dit d'une voix creuse.)

Saint Louis. Le Seigneur m'a visité, par la grâce de Dieu, celui qui vient d'en haut m'a rappelé d'entre les morts.

Guillaume d'Auvergne, Pierre de Cuisy, je vous commande de me mettre sur l'épaule la croix du voyage d'outre-mer. (Blanche et Marguerite font un geste de protestation et s'agenouillent près de lui.)

Blanche. Mon fils, à genoux je vous conjure d'attendre votre guérison.

Marguerite. Mon roi, mon époux, une fois guéri vous ferez ce qu'il vous plaira!

Saint Louis. Je vous déclare que je ne prendrai aucune nourriture que je n'aie reçu la croix. (Guillaume, l'évêque de Paris lui donne la croix. Saint Louis la reçoit avec transport. Il la baise et la met sur sa poitrine.)

Scène Deuxième

(*Trois ans plustard, 1247.*)

Personnages: Saint Louis, Blanche de Castille, Marguerite de Provence, conseillers, laïques.

Evêque de Paris (*à Saint Louis*). Monseigneur roi, rappelez vous que, lorsque vous avez recu la croix, lorsque vous avez fait soudainement et sans réflexion ce vœu redoutable, vous étiez faible, et pour dire vrai, d'un esprit troublé, ce qui ôtait á vos paroles le poids de la vérité.

Evêque de Meaux. Le seigneur pape vous accordera volontiers une dispense. A qui nous laisserez-vous, nous tous, faibles et désolés?

Blanche de Castille (*s'avançant avec un sourire*). Si vous restez la terre Sainte n'aura pas à souffrir. On y enverra plus de troupes que vous ne pourriez y en conduire vous-même.

Saint Louis (*attentif et ému*). Vous dites, que je n'étais pas en possession de mon esprit quand j'ai pris la croix. Eh bien, comme vous le désirez, je la dépose, je vous la rends (portant la main à son épaule, il en détache la croix, disant). La voilà seigneur évêque, je vous remets la croix.

(Les assistants se félicitent, le roi change tout à coup de visage et dit.)

Saint Louis. Mes amis, maintenant, à coup sûr, je ne manque pas de sens et de raison; je ne suis ni faible, ni troublé dans mon esprit. Je demande qu'on me rende la croix. Aucun aliment n'entrera dans ma bouche jusqu'à ce qu'elle soit replacé sur mon épaule.

Blanche de Castille (*essuyant ses larmes, d'une voix défaillante*). Prenez donc l'écharpe et le bâton de pélerin (l'embrassant)—beau, tendre fils, jamais je ne vous verrai plus, le cœur me le dit bien!

Marguerite de Provence (*vivement*). Vous m'emmènerez avec vous; je déclare que jamais je ne me séparerai de vous!

Scène Troisième

(*Mansourah*).

[AVERTISSEMENT: Les croisés s'embarquèrent à Aigues-Mortes et se rendirent en Egypte. Ils eurent d'abord quelques succès: ils prirent Damiette et s'avancèrent vers le Caire. Mais, la peste ravagea l'armée royale. Atteint luimême de la contagion, et dans l'impossibilité de se défendre, Louis IX. prit le parti de capituler avec tous les chevaliers qui l'accompagnaient. La fermeté et la grandeur d'âme du saint roi étonnèrent ses ennemis.]

Le Sultan Malek-Moaddham (*à Saint Louis qu'il vient de délivré de ses chaînes*). Pour prix d'une trêve et de votre liberté, je demande la reddition immédiate, de Damiette, une forte rançon, et la restitution de plusieurs places que les chrétiens tiennent encore en Palestine.

Saint Louis. Je ne puis disposer de ces places; elles ne m'appartiennent pas. Les princes et les religieux chrétiens qui en sont maîtres peuvent seuls les garder ou les rendre.

Le Sultan (*irrité*). Je vous ferai mettre à la torture, ou je vous enverrai au khalife de Bagdad, qui vous retiendra en prison pour le reste de vos jours.

Saint Louis. Je suis votre prisonnier; vous pouvez faire de moi ce que vous voudrez.

Le Sultan. Vous vous dites prisonnier, et je crois en effet que vous l'êtes; mais vous me traitez comme si vous me teniez en prison.

St. Louis. Je payerai volontiers 500,000 livres pour la délivrance de mes gens, et je rendrai Damiette pour la déliverance de ma personne, car je ne suis pas homme qui se doive racheter à prix d'argent.

Le Sultan. Par ma foi, le Franc est large de ne pas marchander sur une si grande somme.

Scène Quatrième

[AVERTISSEMENT: Après sa délivrance Louis IX. passa quatre années dans la Palestine. La mort de sa mère le rappela en France. Pendant quinze ans il consolida l'ouvrage de la

régente. Une dernière croisade l'enleva de nouveau et pour toujours à l'affection de son peuple. A peine avait-il débarqué à Tunis que la peste attaqua et décima l'armée.]

(Saint Louis, atteint de la fièvre, est étendu sur le lit dans sa tente.)

Personnages: Saint Louis; Philippe le Hardi, son fils; Isabelle, sa fille; le roi de Navarre, son gendre; conseillers.

(Tout le monde est agenouillé près du lit.)

Saint Louis. Donnez-moi des nouvelles de mon fils, Jean Tristan.

Philippe (*son fils aîné*). Mon père, il vient d'expirer.

(Saint Louis joigne les mains et prie silencieusement. Après un moment de silence il se lève, regarde autour de lui, aperçoit sa fille Isabelle, qui est en larmes au pied de son lit.)

Saint Louis. Très chère fille, pensez-y bien; beaucoup de gens se sont endormis en folles pensées de péché, et le matin ne se sont trouvés en vie. Voici, très chère fille, des instructions que j'ai écrites pour vous, pour mon fils, Philippe, et pour vous mon gendre, roi de Navarre. (Il retombe sur les coussins, puis se soulève et à voix basse.) Seigneur, aie merci de ce peuple qui demeure ici et ramène le en son pays! Qu'il ne tombe pas en la main de ses ennemis—(Il ferme les yeux.) Jèrusalem, Jérusalem nous irons à Jérusalem.

Seventh and Eighth Grades

Nott William Flint

History: After studying the Cave Men, the Britons, the Romans in Britain, and the Jutes; Angles, and Saxons, the class comes now to the Normans and their conquest of England. So far in our inquiries we have paid small heed to the monotonous succession of kings, or to the vexing political changes, upon which most of the history text-books center. The people—what they were, how they lived, and what they did—a knowledge of the people is what the class has been aiming at. But in the Norman Conquest, at every twist and turn, the student's eye catches the figure of a stark and impetuous man—Duke William of Normandy. And so for this month the children's interest will be turned upon one man, who will be to them, as far as the teacher can make him so, a real and vivid person. The subject for the month might be called: William the Conqueror.

THE NORMAN CONQUEST.

I. William the Conqueror.

1. His birth: Son of Robert of Normandy and a tanner's daughter.

2. His boyhood. In this study the teacher can if he sees fit introduce the institution of chivalry.

3. His manhood.

(a) Attempt of the Norman lords to break his power. Battle of *Val es Dunes.* (What do we learn of William's character from his conduct in this battle?)

(b) Attempt of French dukes to break William's power. Battle of Mortimer and of Varaville. (What do they show in William's character?)

4. William's claim to England.

(a) Harold's visit to Normandy, and his forced oath to the duke. (See Mlle. Ashléman's French outlines in the March and April numbers of the COURSE OF STUDY.)

(b) Did William have any real right to the English throne?

5. The conquest.

(a) Condition of England; lack of unity among the Saxon earls: Harold's battle against the Danes at Stamford bridge; Harold's march to Hastings, and the failure of the Northumbrians to help him.

(b) William's embarkation with the Norman soldiers; the landing in England; the battle of Hastings; death of Harold; acceptance of William as king at London. The whole matter so far will be summed up in two points: William's conspicuous ability as a general, and the lack of unity among the English.

6. Effect of conquest.

(a) How were English customs, laws, and people changed by the Normans? English folkland became crown lands under William. (If the children know nothing of the Saxon communal system, teach it here.)

(b) Growth of the idea of king. (Show how the power of the king had been increasing since Hengist's election.) What William did to make the king supreme. Domesday book; the gathering of the nation; William compels every one to take oath of subservience to him.

(c) Growth of the Norman barons.

(d) English popular assemblies went on as before, only they became Normanized.

(e) English law. The law of the English ordeal now supplemented by the Norman wager of battle. (Read the fight between Brian de Bois Guilbert and Ivanhoe.) Law of murder and Englishry; separation of clerical from secular cases in the English law process. (Show here how our law goes back to these times for its foundation in custom.)

(f) Effect on England from European point of view, i. e., England under William became a European power. England's relation to France. King of England legally a Norman duke under vassalage of French king.

7. Feudalism. Discuss the conditions of society in France, Germany, and England at this time, to bring out the feudal system. The feudal oath: Green's *History of England*, p. 129, Vol. I. Show how this system is rooted in the ideas of individual liberty and of tribal autonomy in the German tribes. Growth of feudalism among the English previous to William's arrival (for protection against the Danes); among the English social strata—eorl, ceorl, thrall.

8. Chivalry. The code of chivalry can be interestingly taught by following the life of a young English baron from boyhood to knighthood.

References: Green, *History of the English People;* Gautin, *Chivalry;* Emerton, *Introduction to the Middle Ages*, *Sources of English History;* Higginson and Channing, *English History for Americans.*

Art Work: The painting and drawing which may be done in connection with this work is limited only by the children's time and desire. Illustrations of scenes they have read about, drawings of old Norman castles, and of knights and the various members of the mediæval society, should not be done by the children in haphazard fashion. Thus, historical truth in the matter of costume should be insisted on.

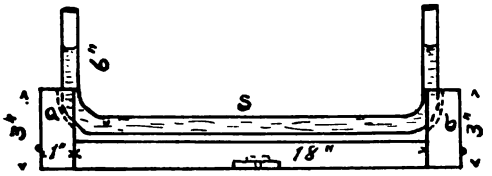
Geography: The work planned for March and April will be carried on through May. That is to say, that the geography will be made to correlate as closely as possible with the history. Also, for this month, a little time will be taken each day for the discussion of current events, especially those which have some reference to the geography of special localities, i.e., the Manchurian question in China.

Mathematics: The school will make, under the direction of Mr. Myers, a topographic map of at least a part of Lincoln Park. The Seventh and Eighth grades will have for their share the running of certain lines, the fixing of angles, and the determination of level lines. This work will be done in the park by class groups of four, and from the notes taken the actual mathematical work will be done in the class. Each pupil will, from the collected data, make his own map of the south end of Lincoln Park. As part of this work the class will make four of the following instruments for determining level lines. This exercise is by Mr. George W. Myers.

CLASS EXERCISES.

Bend up six inches of both ends of a glass tube of ¼-inch bore and of 30 inches length as shown in the cut. This can be done by heating the straight rod gradually in a Bunsen flame until the glass becomes tough, and then bending it with the fingers.

While the glass of one bend is still plastic lay the bent tube down on a plane surface, and with a smooth plane board press down upon the bent tube until the two ends lie in a plane with the middle part of the tube.



Water Level

Of three pieces of surfaced inch stuff 4 inches wide make a holder or cradle for the bent tube as indicated in the figure, allowing the ends of the tube, which are to be held upright, to extend some four inches above the top of the end-pieces *a* and *b*. Then, holding the middle segment *S* of the tube horizontal, fill it with water until the water stands an inch or so above the top of the end-pieces.

By sighting over the surfaces of the two vertical columns of water, a level line is thus indicated.

The apparatus may then be given a practical support in either of two ways:

First. By providing the middle of the under surface of the cradle with a metal plate, perforated with a threaded hole and screwed to the board. This hole will receive the screw which runs through the head of the light tripod, explained under Experiment No. 4, p. 667, April COURSE OF STUDY, after the drawing-board there represented has been removed.

Second. The cradle may be set on top of the drawing, with the apparatus fitted as explained in the April COURSE OF STUDY.

The method of running level lines, or determining the differences of level of points in the field, is obvious, and the purpose of the instrument is the same as that of a civil engineer's leveling instrument. The apparatus will be used in making the topographic survey of Lincoln Park.

Oral Reading: So far as possible, the children will read things in the spirit of the time they are studying. They have have had translations of the Saxon chronicles, and of the Latin authors who wrote about Britain and the Teutons. This paraphrase of two Anglo-Saxon poems—*The Battle of Maldon* and *The Battle of Brunanburh*—was done with the idea of giving the children some notion of Anglo-Saxon poetry. Of course they could not read a line in the original.

The Battle

Meantime the herald,
He of the sea-kings,
Stood in his steading.
Loudly now called he;
Then coming forward
Woe-words he spake:
"For you is this sending,
Bold from the seamen.
I am to say to you—
Send of your gold-hoard
Safety to buy of us.
Surely 'tis better
To buy off this warfare
Than with us to battle
In the hard hand-play.
If so you yield to us,
We will swear peace-words
Over your gold-hoard;
And you, O you chief,
Will thus save your hearth-band
From doom of the battle,
And we the grim sailors
Will promise our peace-word;
And so fare we forth again
In our strong sea-ships,
Foamy-necked travelers,
Laden with treasure,
Over the whale-road
Far to our homing."
Answered the earldorman,
Brythnoth the warrior,
Holding his shield high,
Waving his spear-haft,
Thus made he answer:
"Hear! thou sea-rover
What saith this people;
Tribute they grant you,
You shall have treasure,
Though not of their gold-hoard,
Yet of their weapons—
Points of their spears,
Edges of swords,
Their ancient war-armor;
But these shall avail you
Naught in your fighting.
Word-bringer of rovers,
Go back to thy people,
Give them our wording,
The tale of our anger:
Here stands undaunted
An earl and his war-host,

Ever defending
Our Aethelred's land,
His folk, and his kingdom;
Die shall the heathen,
Killed in our battle.
Yet to me seems it dastard
That after your coming
Far from your home-land
You should fare backward
Rich with our plunder,
Poor of our battle-blows.
Are ye so fearsome?
Between us the sword
And spear should decide
In the fierce war-play."
Then bade he the war-band
Raise high the shield-wall,
War-thin and dinted,
And draw up together
In rank by the stream-side.
When they were ready,
War-hard East Saxons,
Saw they their foemen,
Hardy sea-rovers,
Over the river.
Flood-tide after ebbing
Came up the river,
Parting the war-bands
From the hard hand-play,
So that no hero
His foeman could slay
Save by an arrow;
And from the island-shore,
Girt with sea-farers,
Gleaming with weapons,
Came there sword-clashing;
Eager and ready
Were the bold seamen.
Then Brythnoth speaking,
Called of his warriors
A battle-worn hero,
A man prompt and hardy,
To guard at the fording
(Ceola's son, Wulfstan,
The name of the hero,
And with him twain others,
Aelfere and Manus;
These then held ready
To ward at the fording
So long as their strength held.
Saw the sea-rovers
How the fierce heroes,
Three mighty bridge-wards,
Ready with weapons
To slay the first comers,
Stood at the passage.
Boldly dissembling
Begged they their fording
To lead up their war-bands
Over the water.
Then Brythnoth, strong-hearted,
Longing for battle,
Hard in his pride-faith,
Thought to yield footing,
Granting their wishes
To the grim ocean-wolves.
So Brythelm's son
(All the lords listening)
Called to the strangers
Across the cold water:
"Hark ye, sea-rovers,
Free space is allowed you;
Come hitherward quickly,
Haste to our battle;
And God alone knoweth
Which of us conquers."
Clashed the grim seamen
Shield against weapon,
But they hung backward
Askance from the fording.
So Brythnoth, the stark one,
Silent and haughty,
Motioned his hearth-band
Back from the river,
Yielding free footing
To whoso would land there.
Yet waited those ocean-wolves
Still for a moment,
Facing their foemen
Over the river.
Then with harsh shouting
Hosts of the Vikings
Waded the waters;
Waving their shield-wall,
Climbed they the ford-bank,
Wolves to the slaughter,
Safe with their shield-wall,
Hard bucklers of linden.
And over against them
Brythnoth stood ready,
Silent and sullen,
Brythnoth and his heroes.
Cried to his war-band
Brythnoth the head-man:
"Raise ye the shield-fence,
Hold yourselves ready
'Gainst these our foemen."

* * * * * *

Then came the conflict,
Glory of chieftains,

Doom-hour upon them
To many a hero.

* * * * * *

Over the war-play
Hung the swart raven,
And that horny-nibb'd bird,
The greedy war-hawk,
With ashen feathers,
Waiting for quiet.
Skulked through the marshes
That shadowy beast,
The wolf of the wold.

* * * * * *

Never aforetime
Harder fought battle
Was in this island
Since hitherward roaming,
Fallow seas over,
Engle and Saxon
Came seeking Britain.

Nature Study for May and June, Sixth, Seventh, and Eighth Grades: (KATHARINE M. STILWELL.)

PLANT AND ANIMAL LIFE.

The study of germination has been carried on through the month of April by the use of window-gardens, the hotbed experiments at home, and observations in Lincoln Park.

Weekly records of the landscape, the appearance of the tree selected for special study, the growth of the plants, and the development of the buds have been kept in painting and writing.

Weather conditions were recorded and the records used in a study of the relation between the conditions and the rate of plant growth. The records of heat and moisture for the month were compared with the average for the last twenty years. This average was computed by the pupils from the data in the U. S. Meteorological Summary.

Much interest is manifested in the animal life of this region. Some of the pupils have formed a club which meets in the early morning for the observation of birds. The birds seen are further studied from the specimens in the museum and from the books in the library—each pupil keeping a record, by paintings, of the birds he has seen.

In May, work in all these directions will be continued, but by a study of more specific problems.

Many of the pupils have been able not only to plan the experiments which answer the questions suggested, but also to discover new problems. But here, as elsewhere, are some pupils who need definite directions. To help them, the outline and directions which follow have been prepared.

It is not expected that every pupil will do all the work indicated, but each pupil will select some topic for investigation.

OUTLINE.

I. A study of the plant life of typical areas of this region—park, garden, meadow, ravine, and swamp. Illustrations in color. Collection of specimens.

II. A study of the plants in these areas in relation to moisture, soil, light, heat, and air.

1. Relation of moisture to plant growth.

(a) Source of moisture supply; monthly rainfall and its distribution throughout the year.

(b) Adaptation of plant to moisture conditions; observation of root and leaf structure.

(c) Transpiration; quantity of water used by different plants. (Experiment.)

(d) Water accessible to plant; soil moisture. (Experiment.)

2. Relation of different soils to plant growth.

(a) Soil texture; relation to moisture content. (Experiment.)

(b) Soil constituents; physical analysis of soil. (Experiment.)

3. Relation of light to plant growth.

(a) Part directly influenced by light; study of foliage leaves.

(b) Methods of reaching light.

(c) Leaf arrangement and form.

(d) Formation of starch in foliage leaves.

4. Relation of heat to plant growth.

(a) Temperature of the air.

(b) Temperature of the soil. Note especially during the flowering period. Study this question in relation to the water supply.

5. Relation of air to plant growth.

(a) Plant respiration.

(b) Effect of moisture; dry air.

(c) Direction of the prevailing wind; effect upon vegetation.

III. Mutual relation of plants and animals. Mounting and preserving of specimens.

1. Why the animal seeks the plant; food; home. (Illustrations.)

2. Plant protection.

References: Kerner and Oliver, *Natural History of Plants;* Arthur and MacDougal, *Living Plants;* Gaye, *The Great World's Farm;* Coulter, *Plant Relations*, *Plant Structure;* Barnes, *Plant Life;* Cowles, *Plant Societies of Chicago and its Environs;* Jordan, *Animal Life;* Neltje Blanchan, *Bird Neighbors;* Chapman, *Bird Lore* (magazine); Comstock, *Insect Life;* Weed, *Life Histories of American Insects;* Mabel Osgood Wright, *Birdcraft;* Chapman, *Bird Life*.

NATURE STUDY—DIRECTIONS FOR PUPILS OF THE GRAMMAR GRADES.

I. Relation of plant life to moisture, soil, light, heat, and air.

1. Paint a typical landscape of each of the following areas: swamp, ravine, prairie, sand ridge, and park.

2. Rainfall. Calculate the amount of water that fell on each square foot of ground in April. How does this compare with the average for twenty-five years for that month? How does the rainfall compare with the amount of moisture evaporated from the same surface?

3. Plant form and structure. Make paintings of plants found in each of the places mentioned in 1.

(a) What is the meaning of the variations in form, size, and structure of leaves? Note various arrangements of leaves on the stem; lengths of stems.

(b) Wash soil away from roots of plants. Compare length of roots of various plants. Compute root area of the plant. How does this compare with the amount of moisture in the soil?

4. Transpiration. Experiment 1: Invert a glass vessel (bell-jar) over a small active plant. Note results.

Experiment 2: Insert the petiole of a vigorous leaf through a cardboard. Place the cardboard over a tumbler of water in such a position that the leaf blade projects upward. Invert a second glass over the blade of the leaf. Note results.

Experiment 3: Transplant a seedling of some plant to a wide-mouthed bottle. Put cork around the stem of the plant and seal the bottle air-tight with paraffine. Measure leaf surface, in square inches, of the plant. Weigh the plant and bottle.

(a) Place in sunshine for a day; reweigh. Try the same experiment for a cloudy day and at night. Compare results.

(b) Remove some of the leaves and try the same experiment. Inference.

5. Water in the soil. Experiment: Secure 100 grains of soil from each of the places above mentioned. Place in trays, dry thoroughly, and reweigh.

(a) What per cent of each soil is water?

(b) Show the actual amount of water in a cubic foot of soil.

6. Water available for plant. Experiment: Let a vigorous plant wither for want of water. Weigh the soil, dry thoroughly, and reweigh. Why did the plant wither?

7. Evaporation. Experiment: Fill a pan with soil; weigh. Sink the pan in the ground, with its surface level with the ground.

(a) Test during a sunshiny day and reweigh; a cloudy day, night.

(b) Cover the same kind of soil with sod, and try the same experiments. How does the sod affect the rate of evaporation? Inference.

(c) Find the rate for different soils.

8. Starch formation.

Experiment 21, page 396, Barnes' *Plant Life*. (Teacher will boil the leaves in alcohol to dissolve the chlorophyll.) Test these leaves with iodine.

II. Relation of plant and animal life.

1. Make observations and collections of animal life found in each area.

2. Birds. Make a study of:

(a) Home and nest.

(b) Food.

(c) Relation of form of bill and claw to means of getting food.

(d) Relation of color of the bird to its surroundings.

Paint the bird in its home.

3. Insect and swamp life. Make a study of:

(a) Home.

(b) Food.

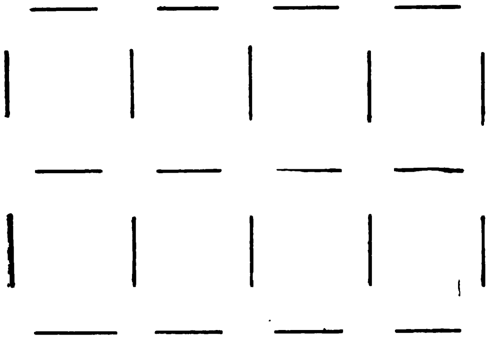
(c) Mouth parts, feet, wings.

From books find more of the life and habits of the animal. Paint the specimen in its home.

French: (MLLE. ASHLÉMAN.) The dramatization of *Guillaume le Conquérant* (see April COURSE OF STUDY) will be continued in May, as well as the memorizing and dramatizing of *Le Pinson et la Pie* and *Le Singe Qui Montre la Lanterne Magique.* The story of this last fable will be written in English by the pupils, and illustrations made both in modeling and painting. These stories and illustrations will be sent as a present from the pupils of these grades to a school of poor children in Jackson, Kentucky, to give them an insight into the character of work done in this school.

The following puzzle will be given to the pupils for solution:

Petits Jeux



Réduire cette figure à 4 carrés égaux, en supprimant: à (six, b) sept allumettes.

Le Pinson et la Pie

" Apprends-moi donc une chanson,"
Demandait la bavarde Pie
A l'agréable et gai Pinson,
Qui chantait au printemps sur l'épine fleuri.
" Allez, vous vous moquez, ma mie.
A gens de votre espèce, ah! je gagerais bien
Que jamais on n'apprendra rien."
" Et quoi! la raison, je te prie?"
" Mais c'est que, pour s'instruire et savoir bien chanter,
Il faudrait savoir écouter,
Et jamais babillard n'écouta de sa vie."

Le Singe Qui Montre la Lanterne Magique

Un homme qui montrait la lanterne magique
Avait un Singe dont les tours
Attiraient chez lui grand concours.
Jacqueau, c'ètait son nom, sur la corde élastique
Dansait et voltigeait au mieux,
Puis faisait le saut périlleux.
Un jour qu 'au cabaret son maître était resté.
(C'était, je pense, un jour de fête),
Notre Singe en liberté
Veut faire un coup de sa tête.
Il s'en va rassembler les divers animaux
Qu'il peut rencontrer dans la ville:
Chiens, chats, poulets, dindons, pourceaux,
Arrivent bientôt à la file.
"Entrez, entrez, messieurs," criait notre Jacqueau;
"C'est ici, c'est ici, qu'un spectacle nouveau
Vous charmera gratis. Oui, messieurs, à la porte
On ne prend point d'argent, je fais tout pour l'honneur."
A ces mots, chaque spectateur
Va se placer et l'on apporte
La lanterne magique; on ferme les volets;
Et, par un discours fait exprès,
Jacqueau prépare l'auditoire.
Ce morceau vraiment oratoire,
Fit bâiller; mais on applaudit.
Content de son succès, notre Singe saisit
Un verre peint qu'il met dans sa lanterne.
Il sait comment on le gouverne,
Et crie en le poussant: "Est-il rien de pareil?
Messieurs, vous voyez le soleil,
Ses rayons et toute sa gloire.
Voici présentement la lune; et puis l'histoire
D'Adam, et d'Ève et des animaux—
Voyez, messieurs, comme ils sont beaux!
Voyez la naissance du monde;
Voyez . . " Les spectateurs, dans une nuit profonde,
Ecarquillaient leurs yeux et ne pouvaient rien voir:
L'appartement, le mur, tout était noir.
"Ma foi," disait un Chat, "de toutes les merveilles
Dont il étourait nos oreilles,
Le fait est que je ne vois rien."
"Ni moi non plus," disait un Chien.
"Moi," disait un Dindon, "je vois bien quelque chose,
Mais je ne sais pour quelle cause
Je ne distingue pas très bien."
Pendant tout ces discours, le Cicéron moderne
Parlait éloquemment et ne se lassait point.
Il n'avait oublié qu'un point:
C'était d'éclairer sa lanterne.—*Florian.*

The High School

Ninth and Tenth Grades

Latin, Eighth and Ninth Grades: (KATHARINE M. STILWELL.) The class will continue the work in *Caesar*, as begun in April, by reading *The Helvetian War*. They are already more or less familiar, through their work in Roman history, with the efforts of Rome to replace the customs of the barbarian tribes with her law and order; and having studied the events which led up to this great struggle, they are in a measure prepared to understand its meaning.

The war will be treated as a piece of universal history, taught by means of maps, pictures, and such other aids as would be employed were the account written in the English language. Latin constructions will be noted and dwelt upon when such reference tends to interpret the thought. Attention will be paid to the Roman use of the subjunctive mode for expressing certain ideas. The class will read the text and discuss the points indicated in the following outline:

I. Cause of the Helvetian migration.

1. Geography of western Gaul—broad, rich plains, sloping from the Cevennes to the ocean, and watered by navigable rivers.

2. Geography of Helvetia—a narrow plateau walled in on the east and south by the Alps, on the west and north by the Jura, and separated from the Roman province by the Rhone. This little strip, at most 200 miles long by 120 miles broad, was the home of 400,000 Helvetians.

The class will be led to see these geographical conditions as the fundamental cause of the migration. They will picture the geography by means of a map which the teacher will sketch before them upon the blackboard. In developing it she will use their knowledge, which she will supplement by vivid descriptions and by pictures.

Members of the class will be called upon to impersonate the Helvetian leaders, and to present arguments for and against removal.

II. The routes.

From the possible routes the class will determine the one to be taken. This will involve a detailed description, including a statement of the advantages and disadvantages of each. (Maps, pictures, and descriptions from literature will be used by the teacher.) The routes will be indicated on the map already upon the blackboard.

III. Caesar.

The decision to take the route to the south through the Roman province brings Caesar with his army over the Alps to the foot of Lake Geneva. The class will precede the army building the Roman road over the Alpine passes to the Rhone, and will watch the construction of the camp on its banks. Caesar's refusal to permit to the Helvetians a passage through the province will lead the class to a discussion of the following questions: Were the Helvetians justified in moving? What would have been the probable effect upon Rome if the Helvetians had carried out their plans? What effect upon our civilization? Was Caesar right in interfering?

IV. Building of the fortification.

The class will follow the construction of the wall from Lake Geneva to the Rhone, expressing the finished work in color.

V. Change of route.

As the class read of the change of route, and Caesar's addition to the army, they will study the organization of the Roman army. In this connection they will read *The Roman Art of War in Caesar's Time* in the introduction to Kelsey's *Caesar;* also Mr. Gould's references on page 177 of the October COURSE OF STUDY.

The expression of the class in this month's work will be: the drawing of maps to show topography of the country and routes of travel; paintings of the wall built by Caesar on the south bank of the Rhone, showing Roman guards in their military equipment; drawings of a Roman camp and winter quarters of the army; clay-modeling of shields and standard, and written papers presenting the arguments of the leaders.

Latin (Caesar), Ninth and Tenth Grades: (KATHARINE M. STILWELL.) This class did not finish reading *The Helvetian War* till the middle of April. They have just started the account of the war with Ariovistus and the Germans; so the work for May will be carried on as planned by Mr. Gould in the April COURSE OF STUDY.

German, Ninth and Tenth Grades: (DR. SIEGFRIED BENIGNUS.) For exercises in grammar—especially in irregular verbs—in oral and written expression, the conquest of Greece by the Romans will be studied.

Reading: *Picturebook without Pictures;* memorizing: *Frühlingswanderung*, by Wilhelm Müller.

Fruhlingswanderung

Der Mai ist auf dem Wege,
Der Mai ist vor der Thür.
Im Garten, auf den Wiesen,
Ihr Blümlein, kommt herfür.

Da hab' ich den Stab genommen,
Da hab' ich das Bündel geschnürt,
Zieh weiter, immer weiter,
Wohin die Strasse mich führt.

Und über mir ziehen die Vögel,
Sie ziehen in lustigen Reihn,
Sie zwitschern und trillern und flöten,
Als ging's in den Himmel hinein.

Der Wandrer geht alleine,
Geht schweigend seinen Gang.
Das Bündel will ihn drücken,
Der Weg wird ihm zu lang.

Ja, wenn wir allzusammen,
So zögen ins Land hinein,
Und wenn auch das nicht wäre,
Könnt eine nur mit mir sein!

Wilhelm Müller, 1794-1827.

French, Ninth and Tenth Grades: (LORLEY ADA ASHLÉMAN.) These grades have been dramatizing *La Dernière Classe*, as stated in the April COURSE OF STUDY. Below is given Act I, showing the manner in which this work has been done.

La Dernière Classe

Acte I

Scène Première

Le temps: Un matin de printemps. La lisière d'un bois au fond du théâtre. Une rue sur le devant.

(Un petit garçon entre marchant très lentement avec des livres sous le bras. Il regarde autour de lui avec envie.)

Frantz. Qu'il fait chaud. Le soleil brille bien fort, et les oiseaux, comme ils chantent! En vérité il fait trop beau pour aller à l'école. D'ailleurs si j'y vais, je serai grondé parceque je ne sais pas ma leçon au sujet des participes! Que ces choses sont stupides! Il faut trop travailler pour apprendre la langue française. (Il s'arrête et semble écouter.) Ah! Voilà les Prussiens qui font l'exercice dans le pré Rippert. Je crois que j'irai les voir. Non! Il faut aller—

Oh! il fait trop beau. Je n'irai pas à l'école. (Il entend l'horloge du village qui sonne le quart.) Déjà neuf heures et un quart. Je suis trop tard pour y aller. Mais que dira M. Hamel demain, et que dirai-je moi? Ce sera bien désagreable. Après tout il vaut mieux aller à l'école! (Il se met à courir dans la direction de l'école.)

Scène Deuxième

(Devant la mairie beaucoup de monde est arrêté près du grillage aux affiches.)

Vieille Femme. Maintenant que font ces Prussiens! Ha, ha! Vous voulez donc que nos enfants n'apprennent pas leur belle langue. (Tout le monde secoue la tête en désapprobation.) Misérables que vous êtes! Mais, vous allez voir! Mes petites (prenant un enfant dans ses bras et l'embrassant) apprendront le français.

(Deux jeunes filles passent.)

Une Fille. Quoi vous dites, qu'il faut maintenant toujours parler allemand. Je ne peux pas d'ailleurs, je ne le veux pas, non, jamais, jamais de ma vie!

(Un homme entre avec sa femme, qui tient un bébé dans ses bras.)

L'Homme. Ma pauvre femme, ce sont là les mauvaises nouvelles! Notre pauvre enfant! Mais, non, nous ne resterons plus dans ce pays! Nous irons à Paris.

La Femme. Mais ce serait si écœurant de quitter notre vieille maison.

(Le Forgeron Wachter et son apprenti entrent en scène.)

Apprenti. Monsieur Wachter, que dit cette affiche, s'il vous plaît ?

Le Forgeron. Il faut, qu'après le quinze mai, toutes les personnes dans l'Alsace et dans la Lorraine parlent allemand! Tous ceux qui n'observeront pas cette commande dans les écoles seront punis. Signé, "Bismarck."

Apprenti. Qui est Bismarck?

Le Forgeron. Le chancelier de fer!

(Frantz entre. Il s'arrête en voyant l'affiche.)

Frantz. Qu'est-ce qu'il y a encore? (Il court vite vers l'école.)

Le Forgeron (*crie après lui*). Ne te dépêche pas tant, petit. Tu y arriveras toujours assez tôt à ton école. Ha! Ha! (Le petit garçon regarde derrière lui et court toujours vers l'école.)

(L'ancien facteur, accompagné de sa fille, lit l'affiche.)

Le Facteur. Depuis deux ans, ma fille, toutes les mauvaises nouvelles sont venues de là.

La Fille du Facteur. Eh, bien! Toi et moi, nous parlerons toujours français a la maison. Nous pouvons au moins garder notre langue.

Scène Troisième

(Les élèves sont déjà rangés à leur place, et M. Hamel passe et repasse avec la règle en fer sous le bras. Frantz ouvre la porte au milieu de ce grand calme. M. Hamel le regarde sans colère et lui dit très doucement.)

M. Hamel. Va vite à ta place, mon petit Frantz; nous allions commencer sans toi.

(Le maître porte sa belle redingote verte, son jabot plissé fin, et sa calotte de soie noire brodée. Toute la classe a quelque chose d'extraordinaire et de solennel. Sur les bancs qui restent vides d'habitude sont assis le vieux Hauser avec son tricorne, l'ancien maire, l'ancien facteur, et puis d'autres personnes encore. Tout le monde paraît triste, et Hauser a un vieil abécédaire mangé aux bords qu'il tient grand ouvert sur ses genoux avec ses grosses lunettes posées en travers des pages. M. Hamel monte dans sa chaire, et de la même voix douce et grave il dit.)

M. Hamel. Mes enfants, c'est la dernière fois que je vous fais la classe. L'ordre est venu de Berlin de ne plus enseigner que l'allemand dans les écoles de l'Alsace et de Lorraine. Le nouveau maître arrive demain. Aujourd'hui c'est votre dernière leçon de français. Je vous prie d'être bien attentifs.

(Ces quelques paroles bouleversent le petit Frantz, et il s'écrie.)

Frantz. Ah les misérables, voilà ce qu'ils avaient affiché à la mairie. Ma dernière leçon de français. (Il se cache la figure dans les mains.)

M. Hamel. Oui, mon petit Frantz. (Il se tourne vers Jeanne.) Eh bien, Jeanne, allez au tableau noir et dites nous la règle du participe passé conjugué avec *avoir.* Ecrivez des exemples qui nous feront voir que vous comprenez bien la règle."

Jeanne (*écrit sur le tableau noir*). "J'ai fini ma leçon." Avec l'auxiliaire *avoir,* le participe passé est invariable quand l'objet direct suit le verbe.

"Je l'ai finie." Quand l'objet direct précède le verbe, le participe passé s'accorde avec l'objet direct.

M. Hamel. C'est très bien, ma petite. Louise, continuez.

Louise. Avec l'auxiliaire *être* le participe passé s'accorde avec le sujet. "La dame est venue."

M. Hamel. Bravo, Louise. Maintenant, Frantz, dites-moi encore une fois cette règle. (Frantz n'entend pas.) Frantz! Frantz! voyons, mon petit, les règles du participe.

Frantz (*à lui-même*). Mais je ne les sais pas. (Il se lève; et il essaye de réciter, mais il s'embrouille tout de suite.) L'auxiliaire *avoir*—avec, l'auxiliaire *avoir,* le par-ti-cipe—(Il reste debout près de son banc sans oser lever la tête.)

M. Hamel. Je ne te gronderai pas, mon petit Frantz; tu dois être assez puni. Voilà ce que c'est, tous les jours on se dit: "Bah! J'ai bien le temps. J'apprendrai demain." Et puis tu vois ce qui arrive. Ah ça a été le grand malheur de notre Alsace; toujours remettre son instruction à demain. Maintenant ces gens là sont en droit de nous dire: "Comment vous pretendiez être français, et vous ne savez ni parler, ni écrire votre langue?" Dans tout cela, mon pauvre Frantz, ce n'est pas encore toi le plus coupable. Nous avons tous notre part de reproches à nous faire. (On entend les pigeons qui roucoulent. Une petite fille assise près de la fenêtre fait la question.)

La Petite Fille. Est-ce qu'on va les obliger à chanter en allemand eux aussi?

M. Hamel (*sourit tristement et caresse sa chevelure blonde*). La langue Française, mes enfants, c'est la plus belle langue du monde, la plus claire, la plus solide. Il faut la garder entre vous et ne jamais l'oublier, parceque, quand un peuple tombe esclave, tant qu'il tient bien sa langue, c'est comme s'il tenait la clef de sa prison.

Eh bien! Passons à l'écriture. Prenez vos cahiers et vos plumes. (M. Hamel écrit sur le tableau noir en grandes lettres: "ALSACE—LORRAINE." Les élèves se mettent à écrire.)

M. Hamel. Maintenant, vous, mes petits, nous allons chanter nos lettres.

Les Élèvès. B-a, ba; b-e be; b-i bi; ba, be, bi; b-o, bo; ba, be, bi, bo; b-u, bu; ba, be, bi, bo, bu.

(Le vieux Hauser met ses lunettes, et il épelle les lettres avec les élèves. Sa voix tremble d'émotion. Tout à coup l'horloge de l'église sonne midi, puis l'angelus. Au même moment, les trompettes des Prussiens éclatent sous les fenêtres. M. Hamel, se lève, tout pâle dans sa chaire, et dit.)

M. Hamel. Mes amis, mes amis—je—je—(Il se tourne vers le tableau noir, prend un morceau de craie, et en appuyant de toutes ses forces il écrit aussi gros qu'il peut: "VIVE LA FRANCE!" Puis il reste là, la tête appuyée au mur et sans parler; avec sa main il fait signe.) Allez vous en. *C'est fini.*

History, Ninth and Tenth Grades: (GUDRUN THORNE-THOMSEN.) The class has not been able to accomplish so much work as has been outlined for the previous months, so that for the month of May nothing new has been planned.

Physiography, Ninth Grade: (WALLACE W. ATWOOD.) Subject: THE OCEAN. Excursions to the Lake Michigan shores and

to the museums will be made when possible. Laboratory work in the study of sea-water and sea-life will also be introduced.

I. Form and extent. (Study relief globes.)

1. As compared with land.

2. In northern and southern hemispheres.

II. Exploration of the ocean. Examination of instruments in museums.

1. Sounding instruments and water-bottle.

2. Deep-sea thermometers.

3. Dredges.

III. Depths. Draw cross-section to different scales.

1. Greatest.

2. Average.

IV. Topography of the ocean-bottom. Study routes of cables.

1. The general features include broad plains, low ridges, shelves, mountains, and cliffs.

2. Compare with topography of the land. What are the reasons for the differences in the topography of the land and that of the sea-bottom?

V. Deposits on the ocean-bottom. Examine specimens in museums.

1. Kinds of materials:

(a) From the land.

(b) From the air.

(c) From the water.

2. Distribution of sediments. How are sediments deposited in Lake Michigan?

(a) Of gravels, sands and clays.

(b) Of meteoric material.

(c) Of oozes.

(d) Explain distribution.

VI. Composition of ocean-water. Laboratory experiments with salt solutions.

1. Kinds and amounts of salts in solution.

2. Gases of sea-water.

3. Variations in salinity. Compare saltness in Doldrum belt, Arctic regions, and portions near river mouths, with that of the water in the trade-wind belts.

4. Influence of salt on:

(a) Taste.

(b) Density.

(c) Freezing-point.

(d) Clearness.

(e) Viscosity.

VII. Density of sea-water depends on:

1. Temperature.

2. Salinity.

3. Depth.

VIII. Temperature of the sea. Study charts.

1. Surface variations. Compare with variations on land.

2. Vertical variations:

(a) In high latitudes.

(b) In low latitudes.

3. Changes in density with changes in temperature.

4. Influence of differences in temperature on circulation.

5. Temperatures of inclosed seas.

(a) Red Sea.

(b) Mediterranean Sea.

(c) Caribbean Sea.

IX. Ice of the sea. Pictures and lantern-slides will be used in this work.

1. Temperature of freezing.

2. Depth of freezing.

3. Geographic distribution.

4. Forms:

(a) Flows.

(b) Packs.

(c) The ice-foot.

(d) Bergs.

(e) Ground ice.

X. Movements of the sea. Study wave action at the shore of Lake Michigan.

1. Kinds of movement:

(a) Waves.

(b) Currents.

(c) Drift.

(d) Creep.

(e) Tides.

2. Causes of movement:

(a) Winds.

(b) Unequal density.

(c) Earthquakes.

(d) Varying attractions of sun and moon.

3. Discuss the nature and cause of each class of movement, and also the influence of each movement upon shore-lines, climate, navigation, or however shown.

XI. Life of the sea. Study pictures, lantern-slides, and specimens in museums.

1. Plant life:

(a) Distribution.

(b) Characteristics.

2. Animal life:

(a) Distribution; the littoral fauna, the surface fauna, the ocean-bottom fauna.

(b) Characteristics of each fauna.

(c) Corals and coral formations might well come in at this point, but they were discussed during the study of shore-lines.

XII. Offices of sea.

1. Supplies most of the moisture to the atmosphere.
2. Regulates in part the distribution of temperature.
3. Wears away the shores.
4. "Receives and preserves the materials out of which new land will in course of time be formed."

Art Expression: Ocean scenes in various latitudes by means of chalk and water-colors.

References: Davis, *Physical Geography;* Mill, *Realm of Nature;* Geikie, *Elementary Lessons in Physical Geography.*

Mathematics, Ninth and Tenth Grades: (George W. Myers.)

Experiment No. 26. Find the length of earth's radius by Wallace's method.

Let A, B, C of the figure be the tops of three posts of same height above water-level set up along the shore of Lake Michigan or by the side of a straight canal. Sighting from A over B the line of sight will cut the vertical post at C at a point D above C. The points A, B, and C will be on a circumference concentric with the circumference a, b, c of the earth's surface. Let CD, BD, and AD be measured. Suppose the vertical Dc meets the circumference A, B, C at d.

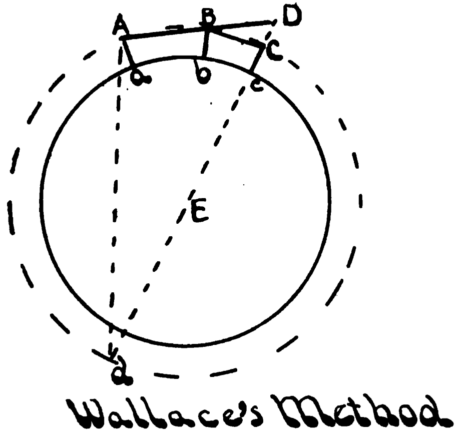


Fig. 23.

Then by elementary geometry, since $BAd = BCD$, and BDC is common to the triangles BCD and DAd, these two triangles are similar, and

$$\frac{dD}{AD}=\frac{BD}{CD}, \text{ or } dD=\frac{BD}{CD}\times AD.$$

But $dD=2r$ (nearly); r denoting the radius of the earth. Hence

$$r=\tfrac{1}{2}\,\frac{BD}{CD}\times AD.$$

Experiment No. 27. To find the radius of the earth.

After the latitude and longitude of points on the earth's surface are found, it is possible to determine the radius of the earth in miles. The geographical co-ordinates of the Observatory of Berlin are given in the Jahrbuch as Longitude $+0$ h. 0 m. 0 s. and Latitude $+52° 30'.2$, and for Cape Town, South Africa, Longitude -0 h. 20.3 m. and Latitude $-33° 56'$. Supposing the earth to be a sphere, and that the two stations, as B and C, lie on the same meridian (which is roughly true for Berlin and Cape Town, and the discrepancy can be allowed for), compute the radius of the earth, BE, and the chord extending from Berlin, B, to Cape Town Observatory, C, assuming the measured length of the great circle arc, CQB, to be 6,495.6 miles.

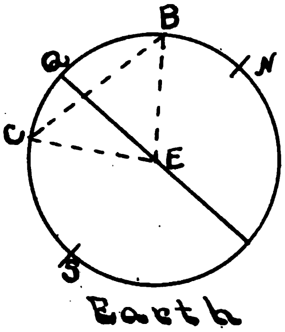


Fig. 24.

Using the 18" terrestrial globe and scale of both miles and degrees, determine the radius of the earth from measures of arcs of great circles between various places.

Hipparchus found that on March 31st at noon the sun shone vertically into a deep well at the city of Syene, 500 miles south of Alexandria, while at the latter place the gnomon showed that at noon of the same day the sun was south of the zenith by $\frac{1}{50}$ of a circle ($=7°.2$). What would these data indicate the circumference and radius of the earth to be?

[Note: The arc Berlin–Cape Town is not the one actually used; but it will suffice to illustrate the method as well as the one actually used, and these stations are needed in the next experiment.]

Experiment No. 28. To find the distance to the moon.

The stations used above, Berlin and Cape Town, will exemplify the present problem. The observer at Berlin, B, measures the altitude,

$N_1 B M$, or zenith distance, $Z_1 B M$, of the moon, by means of the most accurate instruments available, constructed on the principles crudely represented in our hand quadrant, or Tycho's quadrant described in the April number of the Course of Study. So also does the observer at the Cape Observatory, C, measure the zenith distance, $Z_2 C M$, or the altitude, $N_2 C M$, at the same time as does the observer at B. The time is set by previous agreement. The former experiment gave us $B E$ ($= E C$) and $B C$. The sum of the latitudes being $B E C$ ($= 96^\circ$ 26'.2), one-half the difference between 180° and $B E C$ gives $E B C$, or $E C B$. Having measured $Z_1 B M$ and $Z_2 C M$, the former added to $E B C$ and the sum deducted from 180° will leave $M B C$ in degrees, and the latter added to $E C B$ and the sum subtracted from 180° will leave $B C M$. Knowing $B C M$, $C B M$, and $B C$, we solve the triangle by geometry, or better, by trigonometry, and obtain $B M$ and $C M$, and finally $E M$, the desired distance from the moon to the earth.

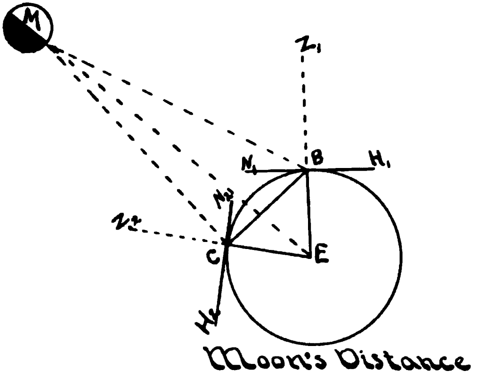


Fig. 25.

Supposing the Berlin observer finds the zenith distance, $Z_1 B M$, of the moon to be 53° 15 .1, at the instant that the Cape Town astronomer finds the zenith distance, $Z_2 C M$, to be 34° 28.' How far is the moon from the earth; i. e., how long is $E M$, if the radius of the earth is 3,963 miles?

Experiment No. 29. To find the distance from the earth to the sun.

(a) By Aristotle's method.

Note the length of the interval of time from new moon to first quarter as indicated by the straightness of the terminator. Knowing then the length of the lunation, 29.53 days (synodic month, time from new moon to new moon again), and that the moon moves through 360° during this lunation, the angular velocity of the moon, and hence the angle $S E M$, is obtained. The angle at M being right (90°) at this instant, a small right triangle may be constructed on paper having any convenient length for $M E$ (which represents the distance to the moon found in the last experiment), and the known values for $S M E$ and $M E S$, from which the length of the hypothenuse may be read to the scale on which $M E$ represents the lunar distance. The hypothenuse so expressed will represent the distance to the sun.

Using times of new moon and first quarter from a common patent medicine almanac, and 238,000 miles for the lunar distance, find the sun's distance. Solve the problem both geometrically and trigonometrically if you can.

(b) Geometrical methods by transits of Venus will be given after the method of finding relative planetary distances is developed.

Experiment No. 30. To find distances from sun to Mercury and Venus in terms of earth's distance from the sun.

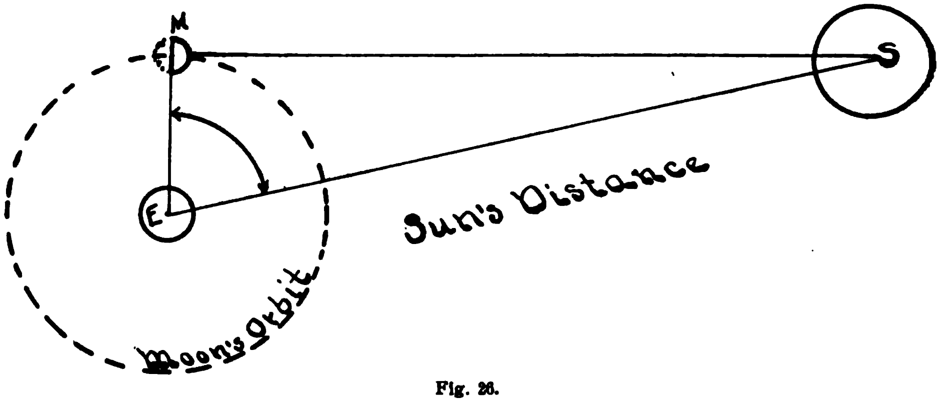


Fig. 26.

The earth, E, and Venus (the method will be seen to apply to Mercury also), V, revolve round the sun, S, in the same direction, the earth moving more slowly. When Venus comes into line with the earth and sun, as at V_1, we say the planet is in ***inferior conjunction***, and when it is at V_3 it is said to be in ***superior conjunction***. When the planet has swung out its farthest from the sun, as at V_2 or V_4, it is said to be at ***greatest elongation, eastern or western***. Note that at this instant the angle at the planet in the triangle SV_2E, or SV_4E, is right. The angle at E may be measured directly, or it may be obtained from a common almanac. Then assuming any desired scale for SE, a right triangle may be constructed on paper, having the angles E and S ($=90°-E$) at the ends of SE. SV_2, or SV_4, will then denote the required distance. It may be measured by noting the mean time when Venus (or Mercury) crosses the meridian, and then converting the time interval into angle by multiplying the hours, minutes, and seconds by 15.

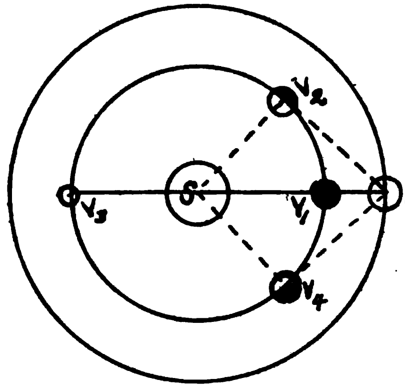


Fig. 27.

When SE is known, SV may be stated in miles. This same method holds good for either Mercury or Venus; but for no other planets.

Solve this problem both geometrically, by drawing to scale, and trigonometrically, using data of almanac.

EXPERIMENT No. 31. To find distance from sun to Mars, or to any planet whose orbit lies beyond that of the earth. (The period of revolution of Mars is supposed to be known. Call it 687 days.)

At any instant measure the angle SE_1M at the earth between the sun and Mars. Six hundred and eighty-seven days afterward Mars will be in the same place again, but the earth will have moved around twice, lacking 43.5 ($2 \times 365.25-687$) days. Measure the angle SE_1M at this time, and remembering that the earth moves over $360°+365\frac{1}{4}$ daily, we have only to multiply $\frac{360^\circ}{365.25}$ by 4 to obtain the angle ESE_1. Since SE and SE_1 are supposed equal and known, a quadrilateral may be readily drawn to scale, from which the straght line MS may be read. Obviously, this process is applicable. to any planet beyond the earth, as soon as its period is known, and this may be obtained by direct observation, as we hope to show later. Using observed data, or data of the Ephemeris, compute the distance from Mars to sun, and do same for other planets.

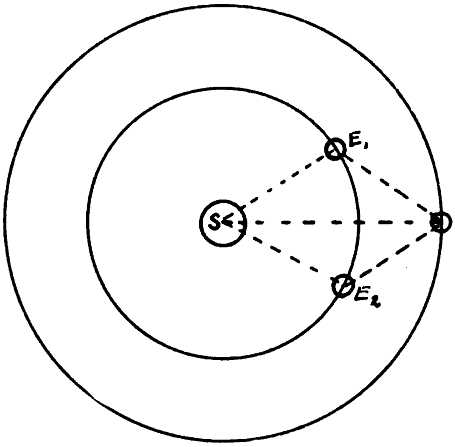


Fig. 28.

[NOTE: The last two experiments show how the distances of all the planets are made to depend upon the earth's distance by the simple geometric treatment of observational data. It is with the hope of getting the earth's distance more accurately than ever before that astronomers are giving so much work just now to the little planet called Eros. Whatever error remains in the earth's distance vitiates all other distances and dimensions, not only in the solar system, but throughout the stellar universe.]

EXPERIMENT No. 32. To find the distance from the sun to a star.

Let S represent the sun and E_1ME_2N the orbit of the earth. Let B denote the position of a star, say of Alpha Centauri. On a certain date the star B seen from E_1 would be projected on the sky among the stars $CDEF$. Six months later the earth has been carried in its annual journey to E_2 (186,000,000 miles from

Ever defending
Our Aethelred's land,
His folk, and his kingdom;
Die shall the heathen,
Killed in our battle.
Yet to me seems it dastard
That after your coming
Far from your home-land
You should fare backward
Rich with our plunder,
Poor of our battle-blows.
Are ye so fearsome?
Between us the sword
And spear should decide
In the fierce war-play."
Then bade he the war-band
Raise high the shield-wall,
War-thin and dinted,
And draw up together
In rank by the stream-side.
When they were ready,
War-hard East Saxons,
Saw they their foemen,
Hardy sea-rovers,
Over the river.
Flood-tide after ebbing
Came up the river,
Parting the war-bands
From the hard hand-play,
So that no hero
His foeman could slay
Save by an arrow;
And from the island-shore,
Girt with sea-farers,
Gleaming with weapons,
Came there sword-clashing;
Eager and ready
Were the bold seamen.
Then Brythnoth speaking,
Called of his warriors
A battle-worn hero,
A man prompt and hardy,
To guard at the fording
(Ceola's son, Wulfstan,
The name of the hero,
And with him twain others,
Aelfere and Manus;
These then held ready
To ward at the fording
So long as their strength held.
Saw the sea-rovers
How the fierce heroes,
Three mighty bridge-wards,
Ready with weapons
To slay the first comers,
Stood at the passage.
Boldly dissembling
Begged they their fording
To lead up their war-bands
Over the water.
Then Brythnoth, strong-hearted,
Longing for battle,
Hard in his pride-faith,
Thought to yield footing,
Granting their wishes
To the grim ocean-wolves.
So Brythelm's son
(All the lords listening)
Called to the strangers
Across the cold water:
"Hark ye, sea-rovers,
Free space is allowed you;
Come hitherward quickly,
Haste to our battle;
And God alone knoweth
Which of us conquers."
Clashed the grim seamen
Shield against weapon,
But they hung backward
Askance from the fording.
So Brythnoth, the stark one,
Silent and haughty,
Motioned his hearth-band
Back from the river,
Yielding free footing
To whoso would land there.
Yet waited those ocean-wolves
Still for a moment,
Facing their foemen
Over the river.
Then with harsh shouting
Hosts of the Vikings
Waded the waters;
Waving their shield-wall,
Climbed they the ford-bank,
Wolves to the slaughter,
Safe with their shield-wall,
Hard bucklers of linden.
And over against them
Brythnoth stood ready,
Silent and sullen,
Brythnoth and his heroes.
Cried to his war-band
Brythnoth the head-man:
"Raise ye the shield-fence,
Hold yourselves ready
'Gainst these our foemen."

* * * * * *

Then came the conflict,
Glory of chieftains,

Doom-hour upon them
To many a hero.

* * * * * *

Over the war-play
Hung the swart raven,
And that horny-nibb'd bird,
The greedy war-hawk,
With ashen feathers,
Waiting for quiet.
Skulked through the marshes
That shadowy beast,
The wolf of the wold.

* * * * * *

Never aforetime
Harder fought battle
Was in this island
Since hitherward roaming,
Fallow seas over,
Engle and Saxon
Came seeking Britain.

Nature Study for May and June, Sixth, Seventh, and Eighth Grades: (KATHARINE M. STILWELL.)

PLANT AND ANIMAL LIFE.

The study of germination has been carried on through the month of April by the use of window-gardens, the hotbed experiments at home, and observations in Lincoln Park.

Weekly records of the landscape, the appearance of the tree selected for special study, the growth of the plants, and the development of the buds have been kept in painting and writing.

Weather conditions were recorded and the records used in a study of the relation between the conditions and the rate of plant growth. The records of heat and moisture for the month were compared with the average for the last twenty years. This average was computed by the pupils from the data in the U. S. Meteorological Summary.

Much interest is manifested in the animal life of this region. Some of the pupils have formed a club which meets in the early morning for the observation of birds. The birds seen are further studied from the specimens in the museum and from the books in the library—each pupil keeping a record, by paintings, of the birds he has seen.

In May, work in all these directions will be continued, but by a study of more specific problems.

Many of the pupils have been able not only to plan the experiments which answer the questions suggested, but also to discover new problems. But here, as elsewhere, are some pupils who need definite directions. To help them, the outline and directions which follow have been prepared.

It is not expected that every pupil will do all the work indicated, but each pupil will select some topic for investigation.

OUTLINE.

I. A study of the plant life of typical areas of this region—park, garden, meadow, ravine, and swamp. Illustrations in color. Collection of specimens.

II. A study of the plants in these areas in relation to moisture, soil, light, heat, and air.

1. Relation of moisture to plant growth.

(a) Source of moisture supply; monthly rainfall and its distribution throughout the year.

(b) Adaptation of plant to moisture conditions; observation of root and leaf structure.

(c) Transpiration; quantity of water used by different plants. (Experiment.)

(d) Water accessible to plant; soil moisture. (Experiment.)

2. Relation of different soils to plant growth.

(a) Soil texture; relation to moisture content. (Experiment.)

(b) Soil constituents; physical analysis of soil. (Experiment.)

3. Relation of light to plant growth.

(a) Part directly influenced by light; study of foliage leaves.

(b) Methods of reaching light.

(c) Leaf arrangement and form.

(d) Formation of starch in foliage leaves.

4. Relation of heat to plant growth.

(a) Temperature of the air.

(b) Temperature of the soil. Note especially during the flowering period. Study this question in relation to the water supply.

5. Relation of air to plant growth.

(a) Plant respiration.

(b) Effect of moisture; dry air.

(c) Direction of the prevailing wind; effect upon vegetation.

III. Mutual relation of plants and animals. Mounting and preserving of specimens.

1. Why the animal seeks the plant; food; home. (Illustrations.)

2. Plant protection.

References: Kerner and Oliver, *Natural History of Plants;* Arthur and MacDougal, *Living Plants;* Gaye, *The Great World's Farm;* Coulter, *Plant Relations, Plant Structure;* Barnes, *Plant Life;* Cowles, *Plant Societies of Chicago and its Environs;* Jordan, *Animal Life;* Neltje Blanchan, *Bird Neighbors;* Chapman, *Bird Lore* (magazine); Comstock, *Insect Life;* Weed, *Life Histories of American Insects;* Mabel Osgood Wright, *Birdcraft;* Chapman, *Bird Life.*

Nature Study—Directions for Pupils of the Grammar Grades.

I. Relation of plant life to moisture, soil, light, heat, and air.

1. Paint a typical landscape of each of the following areas: swamp, ravine, prairie, sand ridge, and park.

2. Rainfall. Calculate the amount of water that fell on each square foot of ground in April. How does this compare with the average for twenty-five years for that month? How does the rainfall compare with the amount of moisture evaporated from the same surface?

3. Plant form and structure. Make paintings of plants found in each of the places mentioned in 1.

(a) What is the meaning of the variations in form, size, and structure of leaves? Note various arrangements of leaves on the stem; lengths of stems.

(b) Wash soil away from roots of plants. Compare length of roots of various plants. Compute root area of the plant. How does this compare with the amount of moisture in the soil?

4. Transpiration. Experiment 1: Invert a glass vessel (bell-jar) over a small active plant. Note results.

Experiment 2: Insert the petiole of a vigorous leaf through a cardboard. Place the cardboard over a tumbler of water in such a position that the leaf blade projects upward. Invert a second glass over the blade of the leaf. Note results.

Experiment 3: Transplant a seedling of some plant to a wide-mouthed bottle. Put cork around the stem of the plant and seal the bottle air-tight with paraffine. Measure leaf surface, in square inches, of the plant. Weigh the plant and bottle.

(a) Place in sunshine for a day; reweigh. Try the same experiment for a cloudy day and at night. Compare results.

(b) Remove some of the leaves and try the same experiment. Inference.

5. Water in the soil. Experiment: Secure 100 grains of soil from each of the places above mentioned. Place in trays, dry thoroughly, and reweigh.

(a) What per cent of each soil is water?

(b) Show the actual amount of water in a cubic foot of soil.

6. Water available for plant. Experiment: Let a vigorous plant wither for want of water. Weigh the soil, dry thoroughly, and reweigh. Why did the plant wither?

7. Evaporation. Experiment: Fill a pan with soil; weigh. Sink the pan in the ground, with its surface level with the ground.

(a) Test during a sunshiny day and reweigh; a cloudy day, night.

(b) Cover the same kind of soil with sod, and try the same experiments. How does the sod affect the rate of evaporation? Inference.

(c) Find the rate for different soils.

8. Starch formation.

Experiment 21, page 396, Barnes' *Plant Life.* (Teacher will boil the leaves in alcohol to dissolve the chlorophyll.) Test these leaves with iodine.

II. Relation of plant and animal life.

1. Make observations and collections of animal life found in each area.

2. Birds. Make a study of:

(a) Home and nest.

(b) Food.

(c) Relation of form of bill and claw to means of getting food.

(d) Relation of color of the bird to its surroundings.

Paint the bird in its home.

3. Insect and swamp life. Make a study of:

(a) Home.

(b) Food.

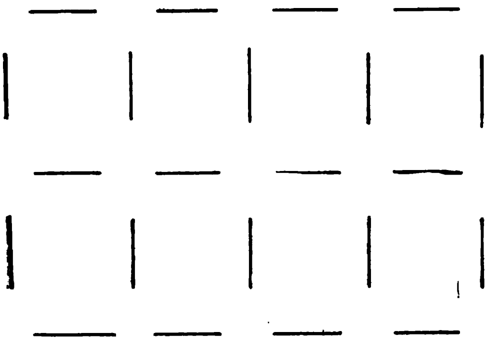
(c) Mouth parts, feet, wings.

From books find more of the life and habits of the animal. Paint the specimen in its home.

French: (MLLE. ASHLÉMAN.) The dramatization of *Guillaume le Conquérant* (see April COURSE OF STUDY) will be continued in May, as well as the memorizing and dramatizing of *Le Pinson et la Pie* and *Le Singe Qui Montre la Lanterne Magique.* The story of this last fable will be written in English by the pupils, and illustrations made both in modeling and painting. These stories and illustrations will be sent as a present from the pupils of these grades to a school of poor children in Jackson, Kentucky, to give them an insight into the character of work done in this school.

The following puzzle will be given to the pupils for solution:

Petits Jeux



Réduire cette figure à 4 carrés égaux, en supprimant: à (six, b) sept allumettes.

Le Pinson et la Pie

"Apprends-moi donc une chanson,"
Demandait la bavarde Pie
A l'agréable et gai Pinson,
Qui chantait au printemps sur l'épine fleuri.
"Allez, vous vous moquez, ma mie.
A gens de votre espèce, ah! je gagerais bien
Que jamais on n'apprendra rien."
"Et quoi! la raison, je te prie?"
"Mais c'est que, pour s'instruire et savoir bien chanter,
Il faudrait savoir écouter,
Et jamais babillard n'écouta de sa vie."

Le Singe Qui Montre la Lanterne Magique

Un homme qui montrait la lanterne magique
Avait un Singe dont les tours
Attiraient chez lui grand concours.
Jacqueau, c'était son nom, sur la corde élastique
Dansait et voltigeait au mieux,
Puis faisait le saut périlleux.
Un jour qu 'au cabaret son maître était resté.
(C'était, je pense, un jour de fête),
Notre Singe en liberté
Veut faire un coup de sa tête.
Il s'en va rassembler les divers animaux
Qu'il peut rencontrer dans la ville:
Chiens, chats, poulets, dindons, pourceaux,
Arrivent bientôt à la file.
"Entrez, entrez, messieurs," criait notre Jacqueau;
"C'est ici, c'est ici, qu'un spectacle nouveau
Vous charmera gratis. Oui, messieurs, à la porte
On ne prend point d'argent, je fais tout pour l'honneur."
A ces mots, chaque spectateur
Va se placer et l'on apporte
La lanterne magique; on ferme les volets;
Et, par un discours fait exprès,
Jacqueau prépare l'auditoire.
Ce morceau vraiment oratoire,
Fit bâiller; mais on applaudit.
Content de son succès, notre Singe saisit
Un verre peint qu'il met dans sa lanterne.
Il sait comment on le gouverne,
Et crie en le poussant: "Est-il rien de pareil?
Messieurs, vous voyez le soleil,
Ses rayons et toute sa gloire.
Voici présentement la lune; et puis l'histoire
D'Adam, et d'Ève et des animaux—
Voyez, messieurs, comme ils sont beaux!
Voyez la naissance du monde;
Voyez . . " Les spectateurs, dans une nuit profonde,
Ecarquillaient leurs yeux et ne pouvaient rien voir:
L'appartement, le mur, tout était noir.
"Ma foi," disait un Chat, "de toutes les merveilles
Dont il étourait nos oreilles,
Le fait est que je ne vois rien."
"Ni moi non plus," disait un Chien.
"Moi," disait un Dindon, "je vois bien quelque chose,
Mais je ne sais pour quelle cause
Je ne distingue pas très bien."
Pendant tout ces discours, le Cicéron moderne
Parlait éloquemment et ne se lassait point.
Il n'avait oublié qu'un point:
C'était d'éclairer sa lanterne.—*Florian.*

The High School

Ninth and Tenth Grades

Latin, Eighth and Ninth Grades: (KATHARINE M. STILWELL.) The class will continue the work in *Caesar*, as begun in April, by reading *The Helvetian War*. They are already more or less familiar, through their work in Roman history, with the efforts of Rome to replace the customs of the barbarian tribes with her law and order; and having studied the events which led up to this great struggle, they are in a measure prepared to understand its meaning.

The war will be treated as a piece of universal history, taught by means of maps, pictures, and such other aids as would be employed were the account written in the English language. Latin constructions will be noted and dwelt upon when such reference tends to interpret the thought. Attention will be paid to the Roman use of the subjunctive mode for expressing certain ideas. The class will read the text and discuss the points indicated in the following outline:

I. Cause of the Helvetian migration.

1. Geography of western Gaul—broad, rich plains, sloping from the Cevennes to the ocean, and watered by navigable rivers.

2. Geography of Helvetia—a narrow plateau walled in on the east and south by the Alps, on the west and north by the Jura, and separated from the Roman province by the Rhone. This little strip, at most 200 miles long by 120 miles broad, was the home of 400,000 Helvetians.

The class will be led to see these geographical conditions as the fundamental cause of the migration. They will picture the geography by means of a map which the teacher will sketch before them upon the blackboard. In developing it she will use their knowledge, which she will supplement by vivid descriptions and by pictures.

Members of the class will be called upon to impersonate the Helvetian leaders, and to present arguments for and against removal.

II. The routes.

From the possible routes the class will determine the one to be taken. This will involve a detailed description, including a statement of the advantages and disadvantages of each. (Maps, pictures, and descriptions from literature will be used by the teacher.) The routes will be indicated on the map already upon the blackboard.

III. Caesar.

The decision to take the route to the south through the Roman province brings Caesar with his army over the Alps to the foot of Lake Geneva. The class will precede the army building the Roman road over the Alpine passes to the Rhone, and will watch the construction of the camp on its banks. Caesar's refusal to permit to the Helvetians a passage through the province will lead the class to a discussion of the following questions: Were the Helvetians justified in moving? What would have been the probable effect upon Rome if the Helvetians had carried out their plans? What effect upon our civilization? Was Caesar right in interfering?

IV. Building of the fortification.

The class will follow the construction of the wall from Lake Geneva to the Rhone, expressing the finished work in color.

V. Change of route.

As the class read of the change of route, and Caesar's addition to the army, they will study the organization of the Roman army. In this connection they will read *The Roman Art of War in Caesar's Time* in the introduction to Kelsey's *Caesar;* also Mr. Gould's references on page 177 of the October COURSE OF STUDY.

The expression of the class in this month's work will be: the drawing of maps to show topography of the country and routes of travel; paintings of the wall built by Caesar on the south bank of the Rhone, showing Roman guards in their military equipment; drawings of a Roman camp and winter quarters of the army; clay-modeling of shields and standard, and written papers presenting the arguments of the leaders.

Latin (Caesar), Ninth and Tenth Grades: (KATHARINE M. STILWELL.) This class did not finish reading *The Helvetian War* till the middle of April. They have just started the account of the war with Ariovistus and the Germans; so the work for May will be carried on as planned by Mr. Gould in the April COURSE OF STUDY.

German, Ninth and Tenth Grades: (DR. SIEGFRIED BENIGNUS.) For exercises in grammar—especially in irregular verbs—in oral and written expression, the conquest of Greece by the Romans will be studied.

Reading: *Picturebook without Pictures;* memorizing: *Frühlingswanderung*, by Wilhelm Müller.

Fruhlingswanderung

Der Mai ist auf dem Wege,
Der Mai ist vor der Thür.
Im Garten, auf den Wiesen,
Ihr Blümlein, kommt herfür.

Da hab' ich den Stab genommen,
Da hab' ich das Bündel geschnürt,
Zieh weiter, immer weiter,
Wohin die Strasse mich führt.

Und über mir ziehen die Vögel,
Sie ziehen in lustigen Reihn,
Sie zwitschern und trillern und flöten,
Als ging's in den Himmel hinein.

Der Wandrer geht alleine,
Geht schweigend seinen Gang.
Das Bündel will ihn drücken,
Der Weg wird ihm zu lang.

Ja, wenn wir allzusammen,
So zögen ins Land hinein,
Und wenn auch das nicht wäre,
Könnt eine nur mit mir sein!

Wilhelm Müller, 1794-1827.

French, Ninth and Tenth Grades: (LORLEY ADA ASHLÉMAN.) These grades have been dramatizing *La Dernière Classe*, as stated in the April COURSE OF STUDY. Below is given Act I, showing the manner in which this work has been done.

La Dernière Classe

Acte I

Scène Première

Le temps: Un matin de printemps. La lisière d'un bois au fond du théâtre. Une rue sur le devant.

(Un petit garçon entre marchant très lentement avec des livres sous le bras. Il regarde autour de lui avec envie.)

Frantz. Qu'il fait chaud. Le soleil brille bien fort, et les oiseaux, comme ils chantent! En vérité il fait trop beau pour aller à l'école. D'ailleurs si j'y vais, je serai grondé parceque je ne sais pas ma leçon au sujet des participes! Que ces choses sont stupides! Il faut trop travailler pour apprendre la langue française. (Il s'arrête et semble écouter.) Ah! Voilà les Prussiens qui font l'exercice dans le pré Rippert. Je crois que j'irai les voir. Non! Il faut aller—

Oh! il fait trop beau. Je n'irai pas à l'école. (Il entend l'horloge du village qui sonne le quart.) Déjà neuf heures et un quart. Je suis trop tard pour y aller. Mais que dira M. Hamel demain, et que dirai-je moi? Ce sera bien désagreable. Après tout il vaut mieux aller à l'école! (Il se met à courir dans la direction de l'école.)

Scène Deuxième

(Devant la mairie beaucoup de monde est arrêté près du grillage aux affiches.)

Vieille Femme. Maintenant que font ces Prussiens! Ha, ha! Vous voulez donc que nos enfants n'apprennent pas leur belle langue. (Tout le monde secoue la tête en désapprobation.) Misérables que vous êtes! Mais, vous allez voir! Mes petites (prenant un enfant dans ses bras et l'embrassant) apprendront le français.

(Deux jeunes filles passent.)

Une Fille. Quoi vous dites, qu'il faut maintenant toujours parler allemand. Je ne peux pas d'ailleurs, je ne le veux pas, non, jamais, jamais de ma vie!

(Un homme entre avec sa femme, qui tient un bébé dans ses bras.)

L'Homme. Ma pauvre femme, ce sont là les mauvaises nouvelles! Notre pauvre enfant! Mais, non, nous ne resterons plus dans ce pays! Nous irons à Paris.

La Femme. Mais ce serait si écœurant de quitter notre vieille maison.

(Le Forgeron Wachter et son apprenti entrent en scène.)

Apprenti. Monsieur Wachter, que dit cette affiche, s'il vous plaît ?

Le Forgeron. Il faut, qu'après le quinze mai, toutes les personnes dans l'Alsace et dans la Lorraine parlent allemand! Tous ceux qui n'observeront pas cette commande dans les écoles seront punis. Signé, "Bismarck."

Apprenti. Qui est Bismarck?

Le Forgeron. Le chancelier de fer!

(Frantz entre. Il s'arrête en voyant l'affiche.)

Frantz. Qu'est-ce qu'il y a encore? (Il court vite vers l'école.)

Le Forgeron (*crie après lui*). Ne te dépêche pas tant, petit. Tu y arriveras toujours assez tôt à ton école. Ha! Ha! (Le petit garçon regarde derrière lui et court toujours vers l'école.)

(L'ancien facteur, accompagné de sa fille, lit l'affiche.)

Le Facteur. Depuis deux ans, ma fille, toutes les mauvaises nouvelles sont venues de là.

La Fille du Facteur. Eh, bien! Toi et moi, nous parlerons toujours français a la maison. Nous pouvons au moins garder notre langue.

Scène Troisième

(Les élèves sont déjà rangés à leur place, et M. Hamel passe et repasse avec la règle en fer sous le bras. Frantz ouvre la porte au milieu de ce grand calme. M. Hamel le regarde sans colère et lui dit très doucement.)

M. Hamel. Va vite à ta place, mon petit Frantz; nous allions commencer sans toi.

(Le maître porte sa belle redingote verte, son jabot plissé fin, et sa calotte de soie noire brodée. Toute la classe a quelque chose d'extraordinaire et de solennel. Sur les bancs qui restent vides d'habitude sont assis le vieux Hauser avec son tricorne, l'ancien maire, l'ancien facteur, et puis d'autres personnes encore. Tout le monde paraît triste, et Hauser a un vieil abécédaire mangé aux bords qu'il tient grand ouvert sur ses genoux avec ses grosses lunettes posées en travers des pages. M. Hamel monte dans sa chaire, et de la même voix douce et grave il dit.)

M. Hamel. Mes enfants, c'est la dernière fois que je vous fais la classe. L'ordre est venu de Berlin de ne plus enseigner que l'allemand dans les écoles de l'Alsace et de Lorraine. Le nouveau maître arrive demain. Aujourd'hui c'est votre dernière leçon de français. Je vous prie d'être bien attentifs.

(Ces quelques paroles bouleversent le petit Frantz, et il s'écrie.)

Frantz. Ah les misérables, voilà ce qu'ils avaient affiché à la mairie. Ma dernière leçon de français. (Il se cache la figure dans les mains.)

M. Hamel. Oui, mon petit Frantz. (Il se tourne vers Jeanne.) Eh bien, Jeanne, allez au tableau noir et dites nous la règle du participe passé conjugué avec *avoir.* Ecrivez des exemples qui nous feront voir que vous comprenez bien la règle."

Jeanne (*écrit sur le tableau noir*). "J'ai fini ma leçon." Avec l'auxiliaire *avoir,* le participe passé est invariable quand l'objet direct suit le verbe.

"Je l'ai finie." Quand l'objet direct précède le verbe, le participe passé s'accorde avec l'objet direct.

M. Hamel. C'est très bien, ma petite. Louise, continuez.

Louise. Avec l'auxiliaire *être* le participe passé s'accorde avec le sujet. "La dame est venue."

M. Hamel. Bravo, Louise. Maintenant, Frantz, dites-moi encore une fois cette règle. (Frantz n'entend pas.) Frantz! Frantz! voyons, mon petit, les règles du participe.

Frantz (*à lui-même*). Mais je ne les sais pas. (Il se lève; et il essaye de réciter, mais il s'embrouille tout de suite.) L'auxiliaire *avoir*—avec, l'auxiliaire *avoir,* le par-ti-cipe—(Il reste debout près de son banc sans oser lever la tête.)

M. Hamel. Je ne te gronderai pas, mon petit Frantz; tu dois être assez puni. Voilà ce que c'est, tous les jours on se dit: "Bah! J'ai bien le temps. J'apprendrai demain." Et puis tu vois ce qui arrive. Ah ça a été le grand malheur de notre Alsace; toujours remettre son instruction à demain. Maintenant ces gens là sont en droit de nous dire: "Comment vous pretendiez être français, et vous ne savez ni parler, ni écrire votre langue?" Dans tout cela, mon pauvre Frantz, ce n'est pas encore toi le plus coupable. Nous avons tous notre part de reproches à nous faire. (On entend les pigeons qui roucoulent. Une petite fille assise près de la fenêtre fait la question.)

La Petite Fille. Est-ce qu'on va les obliger à chanter en allemand eux aussi?

M. Hamel (*sourit tristement et caresse sa chevelure blonde*). La langue Française, mes enfants, c'est la plus belle langue du monde, la plus claire, la plus solide. Il faut la garder entre vous et ne jamais l'oublier, parceque, quand un peuple tombe esclave, tant qu'il tient bien sa langue, c'est comme s'il tenait la clef de sa prison.

Eh bien! Passons à l'écriture. Prenez vos cahiers et vos plumes. (M. Hamel écrit sur le tableau noir en grandes lettres: "ALSACE—LORRAINE." Les élèves se mettent à écrire.)

M. Hamel. Maintenant, vous, mes petits, nous allons chanter nos lettres.

Les Élèvès. B-a, ba; b-e be; b-i bi; ba, be, bi; b-o, bo; ba, be, bi, bo; b-u, bu; ba, be, bi, bo, bu.

(Le vieux Hauser met ses lunettes, et il épelle les lettres avec les élèves. Sa voix tremble d'émotion. Tout à coup l'horloge de l'église sonne midi, puis l'angelus. Au même moment, les trompettes des Prussiens éclatent sous les fenêtres. M. Hamel, se lève, tout pâle dans sa chaire, et dit.)

M. Hamel. Mes amis, mes amis—je—je—(Il se tourne vers le tableau noir, prend un morceau de craie, et en appuyant de toutes ses forces il écrit aussi gros qu'il peut: "VIVE LA FRANCE!" Puis il reste là, la tête appuyée au mur et sans parler; avec sa main il fait signe.) Allez vous en. *C'est fini.*

History, Ninth and Tenth Grades: (GUDRUN THORNE-THOMSEN.) The class has not been able to accomplish so much work as has been outlined for the previous months, so that for the month of May nothing new has been planned.

Physiography, Ninth Grade: (WALLACE W. ATWOOD.) Subject: THE OCEAN. Excursions to the Lake Michigan shores and

to the museums will be made when possible. Laboratory work in the study of sea-water and sea-life will also be introduced.

I. Form and extent. (Study relief globes.)

1. As compared with land.

2. In northern and southern hemispheres.

II. Exploration of the ocean. Examination of instruments in museums.

1. Sounding instruments and water-bottle.

2. Deep-sea thermometers.

3. Dredges.

III. Depths. Draw cross-section to different scales.

1. Greatest.

2. Average.

IV. Topography of the ocean-bottom. Study routes of cables.

1. The general features include broad plains, low ridges, shelves, mountains, and cliffs.

2. Compare with topography of the land. What are the reasons for the differences in the topography of the land and that of the sea-bottom?

V. Deposits on the ocean-bottom. Examine specimens in museums.

1. Kinds of materials:

(a) From the land.

(b) From the air.

(c) From the water.

2. Distribution of sediments, How are sediments deposited in Lake Michigan?

(a) Of gravels, sands and clays.

(b) Of meteoric material.

(c) Of oozes.

(d) Explain distribution.

VI. Composition of ocean-water. Laboratory experiments with salt solutions.

1. Kinds and amounts of salts in solution.

2. Gases of sea-water.

3. Variations in salinity. Compare saltness in Doldrum belt, Arctic regions, and portions near river mouths, with that of the water in the trade-wind belts.

4. Influence of salt on:

(a) Taste.

(b) Density.

(c) Freezing-point.

(d) Clearness.

(e) Viscosity.

VII. Density of sea-water depends on:

1. Temperature.

2. Salinity.

3. Depth.

VIII. Temperature of the sea. Study charts.

1. Surface variations. Compare with variations on land.

2. Vertical variations:

(a) In high latitudes.

(b) In low latitudes.

3. Changes in density with changes in temperature.

4. Influence of differences in temperature on circulation.

5. Temperatures of inclosed seas.

(a) Red Sea.

(b) Mediterranean Sea.

(c) Caribbean Sea.

IX. Ice of the sea. Pictures and lantern-slides will be used in this work.

1. Temperature of freezing.

2. Depth of freezing.

3. Geographic distribution.

4. Forms:

(a) Flows.

(b) Packs.

(c) The ice-foot.

(d) Bergs.

(e) Ground ice.

X. Movements of the sea. Study wave action at the shore of Lake Michigan.

1. Kinds of movement:

(a) Waves.

(b) Currents.

(c) Drift.

(d) Creep.

(e) Tides.

2. Causes of movement:

(a) Winds.

(b) Unequal density.

(c) Earthquakes.

(d) Varying attractions of sun and moon.

3. Discuss the nature and cause of each class of movement, and also the influence of each movement upon shore-lines, climate, navigation, or however shown.

XI. Life of the sea. Study pictures, lantern-slides, and specimens in museums.

1. Plant life:

(a) Distribution.

(b) Characteristics.

2. Animal life:

(a) Distribution; the littoral fauna, the surface fauna, the ocean-bottom fauna.

(b) Characteristics of each fauna.

(c) Corals and coral formations might well come in at this point, but they were discussed during the study of shore-lines.

XII. Offices of sea.

1. Supplies most of the moisture to the atmosphere.
2. Regulates in part the distribution of temperature.
3. Wears away the shores.
4. "Receives and preserves the materials out of which new land will in course of time be formed."

Art Expression: Ocean scenes in various latitudes by means of chalk and water-colors.

References: Davis, *Physical Geography;* Mill, *Realm of Nature;* Geikie, *Elementary Lessons in Physical Geography.*

Mathematics, Ninth and Tenth Grades: (GEORGE W. MYERS.)

EXPERIMENT NO. 26. Find the length of earth's radius by Wallace's method.

Let A, B, C of the figure be the tops of three posts of same height above water-level set up along the shore of Lake Michigan or by the side of a straight canal. Sighting from A over B the line of sight will cut the vertical post at C at a point D above C. The points A, B, and C will be on a circumference concentric with the circumference a, b, c of the earth's surface. Let CD, BD, and AD be measured. Suppose the vertical Dc meets the circumference A, B, C at d.

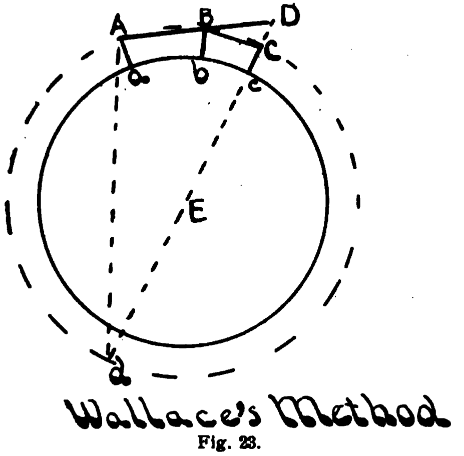


Fig. 23.

Then by elementary geometry, since $BAd = BCD$, and BDC is common to the triangles BCD and DAd, these two triangles are similar, and

$$\frac{dD}{AD}=\frac{BD}{CD}, \text{ or } dD=\frac{BD}{CD}\times AD.$$

But $dD=2r$ (nearly); r denoting the radius of the earth. Hence

$$r=\tfrac{1}{2}\,\frac{BD}{CD}\times AD.$$

EXPERIMENT NO. 27. To find the radius of the earth.

After the latitude and longitude of points on the earth's surface are found, it is possible to determine the radius of the earth in miles. The geographical co-ordinates of the Observatory of Berlin are given in the Jahrbuch as Longitude + 0 h. 0 m. 0 s. and Latitude + 52° 30'.2, and for Cape Town, South Africa, Longitude — 0 h. 20.3 m. and Latitude — 33° 56'. Supposing the earth to be a sphere, and that the two stations, as B and C, lie on the same meridian (which is roughly true for Berlin and Cape Town, and the discrepancy can be allowed for), compute the radius of the earth, BE, and the chord extending from Berlin, B, to Cape Town Observatory, C, assuming the measured length of the great circle arc, CQB, to be 6,495.6 miles.

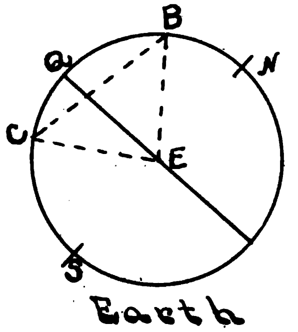


Fig. 24.

Using the 18″ terrestrial globe and scale of both miles and degrees, determine the radius of the earth from measures of arcs of great circles between various places.

Hipparchus found that on March 31st at noon the sun shone vertically into a deep well at the city of Syene, 500 miles south of Alexandria, while at the latter place the gnomon showed that at noon of the same day the sun was south of the zenith by $\frac{1}{50}$ of a circle (= 7°.2). What would these data indicate the circumference and radius of the earth to be?

[NOTE: The arc Berlin-Cape Town is not the one actually used; but it will suffice to illustrate the method as well as the one actually used, and these stations are needed in the next experiment.]

EXPERIMENT NO. 28. To find the distance to the moon.

The stations used above, Berlin and Cape Town, will exemplify the present problem. The observer at Berlin, B, measures the altitude,

N_1BM, or zenith distance, Z_1BM, of the moon, by means of the most accurate instruments available, constructed on the principles crudely represented in our hand quadrant, or Tycho's quadrant described in the April number of the COURSE OF STUDY. So also does the observer at the Cape Observatory, C, measure the zenith distance, Z_2CM, or the altitude, N_2CM, at the same time as does the observer at B. The time is set by previous agreement. The former experiment gave us BE ($= EC$) and BC. The sum of the latitudes being BEC ($= 96° 26'.2$), one-half the difference between 180° and BEC gives EBC, or ECB. Having measured Z_1BM and Z_2CM, the former added to EBC and the sum deducted from 180° will leave MBC in degrees, and the latter added to ECB and the sum subtracted from 180° will leave BCM. Knowing BCM, CBM, and BC, we solve the triangle by geometry, or better, by trigonometry, and obtain BM and CM, and finally EM, the desired distance from the moon to the earth.

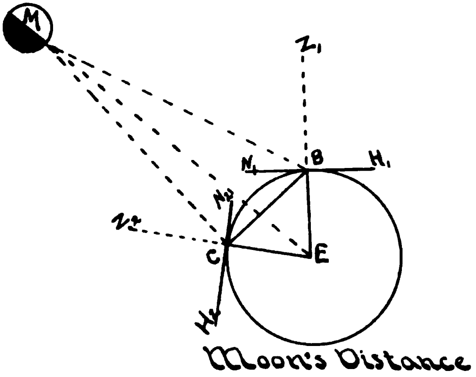


Fig. 25.

Supposing the Berlin observer finds the zenith distance, Z_1BM, of the moon to be 53° 15′.1, at the instant that the Cape Town astronomer finds the zenith distance, Z_2CM, to be 34° 28.′ How far is the moon from the earth; i. e., how long is EM, if the radius of the earth is 3,963 miles?

EXPERIMENT NO. 29. To find the distance from the earth to the sun.

(a) By Aristotle's method.

Note the length of the interval of time from new moon to first quarter as indicated by the straightness of the terminator. Knowing then the length of the lunation, 29.53 days (synodic month, time from new moon to new moon again), and that the moon moves through 360° during this lunation, the angular velocity of the moon, and hence the angle SEM, is obtained. The angle at M being right (90°) at this instant, a small right triangle may be constructed on paper having any convenient length for ME (which represents the distance to the moon found in the last experiment), and the known values for SME and MES, from which the length of the hypothenuse may be read to the scale on which ME represents the lunar distance. The hypothenuse so expressed will represent the distance to the sun.

Using times of new moon and first quarter from a common patent medicine almanac, and 238,000 miles for the lunar distance, find the sun's distance. Solve the problem both geometrically and trigonometrically if you can.

(b) Geometrical methods by transits of Venus will be given after the method of finding relative planetary distances is developed.

EXPERIMENT NO. 30. To find distances from sun to Mercury and Venus in terms of earth's distance from the sun.

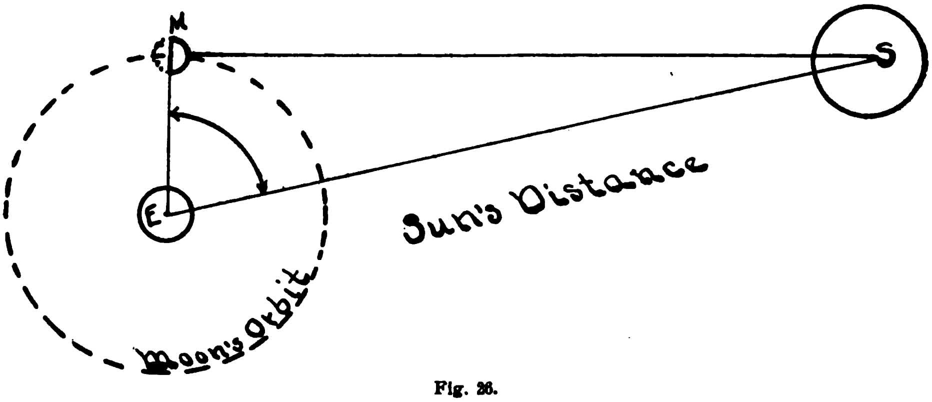


Fig. 26.

The earth, E, and Venus (the method will be seen to apply to Mercury also), V, revolve round the sun, S, in the same direction; the earth moving more slowly. When Venus comes into line with the earth and sun, as at V_1, we say the planet is in ***inferior conjunction***, and when it is at V_3 it is said to be in ***superior conjunction***. When the planet has swung out its farthest from the sun, as at V_2 or V_4, it is said to be at ***greatest elongation, eastern or western***. Note that at this instant the angle at the planet in the triangle $S V_2 E$, or $S V_4 E$, is right. The angle at E may be measured directly, or it may be obtained from a common almanac. Then assuming any desired scale for SE, a right triangle may be constructed on paper, having the angles E and S $(=90^\circ - E)$ at the ends of SE. $S V_2$, or $S V_4$, will then denote the required distance. It may be measured by noting the mean time when Venus (or Mercury) crosses the meridian, and then converting the time interval into angle by multiplying the hours, minutes, and seconds by 15.

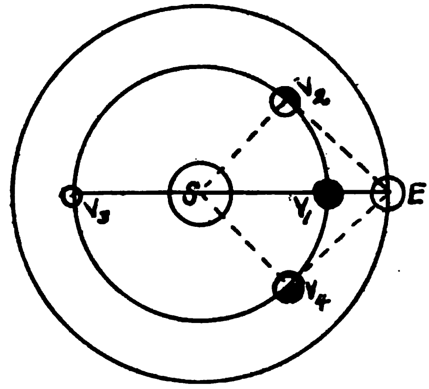


Fig. 27.

When SE is known, SV may be stated in miles. This same method holds good for either Mercury or Venus; but for no other planets.

Solve this problem both geometrically, by drawing to scale, and trigonometrically, using data of almanac.

EXPERIMENT NO. 31. To find distance from sun to Mars, or to any planet whose orbit lies beyond that of the earth. (The period of revolution of Mars is supposed to be known. Call it 687 days.)

At any instant measure the angle $S E_1 M$ at the earth between the sun and Mars. Six hundred and eighty-seven days afterward Mars will be in the same place again, but the earth will have moved around twice, lacking 43.5 $(2 \times 365.25 - 687)$ days. Measure the angle $S E_1 M$ at this time, and remembering that the earth moves over $360^\circ + 365\frac{1}{4}$ daily, we have only to multiply $\frac{360^\circ}{365.25}$ by 4 to obtain the angle $E S E_1$. Since SE and SE_1 are supposed equal and known, a quadrilateral may be readily drawn to scale, from which the straght line MS may be read. Obviously, this process is applicable to any planet beyond the earth, as soon as its period is known, and this may be obtained by direct observation, as we hope to show later. Using observed data, or data of the Ephemeris, compute the distance from Mars to sun, and do same for other planets.

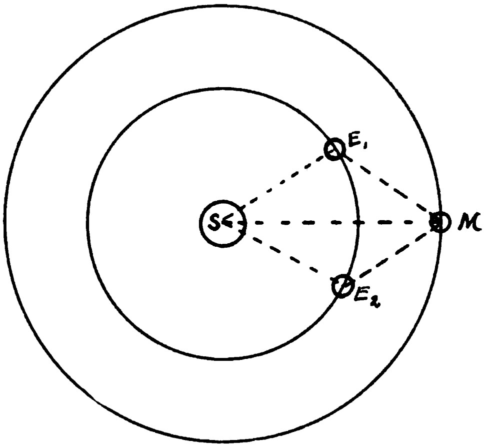


Fig. 28.

[NOTE: The last two experiments show how the distances of all the planets are made to depend upon the earth's distance by the simple geometric treatment of observational data. It is with the hope of getting the earth's distance more accurately than ever before that astronomers are giving so much work just now to the little planet called Eros. Whatever error remains in the earth's distance vitiates all other distances and dimensions, not only in the solar system, but throughout the stellar universe.]

EXPERIMENT NO. 32. To find the distance from the sun to a star.

Let S represent the sun and $E_1 M E_2 N$ the orbit of the earth. Let B denote the position of a star, say of Alpha Centauri. On a certain date the star B seen from E_1 would be projected on the sky among the stars $CDEF$. Six months later the earth has been carried in its annual journey to E_2 (186,000,000 miles from

Ever defending
Our Aethelred's land,
His folk, and his kingdom;
Die shall the heathen,
Killed in our battle.
Yet to me seems it dastard
That after your coming
Far from your home-land
You should fare backward
Rich with our plunder,
Poor of our battle-blows.
Are ye so fearsome?
Between us the sword
And spear should decide
In the fierce war-play."
Then bade he the war-band
Raise high the shield-wall,
War-thin and dinted,
And draw up together
In rank by the stream-side.
When they were ready,
War-hard East Saxons,
Saw they their foemen,
Hardy sea-rovers,
Over the river.
Flood-tide after ebbing
Came up the river,
Parting the war-bands
From the hard hand-play,
So that no hero
His foeman could slay
Save by an arrow;
And from the island-shore,
Girt with sea-farers,
Gleaming with weapons,
Came there sword-clashing;
Eager and ready
Were the bold seamen.
Then Brythnoth speaking,
Called of his warriors
A battle-worn hero,
A man prompt and hardy,
To guard at the fording
(Ceola's son, Wulfstan,
The name of the hero,
And with him twain others,
Aelfere and Manus;
These then held ready
To ward at the fording
So long as their strength held.
Saw the sea-rovers
How the fierce heroes,
Three mighty bridge-wards,
Ready with weapons
To slay the first comers,
Stood at the passage.
Boldly dissembling
Begged they their fording
To lead up their war-bands
Over the water.
Then Brythnoth, strong-hearted,
Longing for battle,
Hard in his pride-faith,
Thought to yield footing,
Granting their wishes
To the grim ocean-wolves.
So Brythelm's son
(All the lords listening)
Called to the strangers
Across the cold water:
" Hark ye, sea-rovers,
Free space is allowed you;
Come hitherward quickly,
Haste to our battle;
And God alone knoweth
Which of us conquers."
Clashed the grim seamen
Shield against weapon,
But they hung backward
Askance from the fording.
So Brythnoth, the stark one,
Silent and haughty,
Motioned his hearth-band
Back from the river,
Yielding free footing
To whoso would land there.
Yet waited those ocean-wolves
Still for a moment,
Facing their foemen
Over the river.
Then with harsh shouting
Hosts of the Vikings
Waded the waters;
Waving their shield-wall,
Climbed they the ford-bank,
Wolves to the slaughter,
Safe with their shield-wall,
Hard bucklers of linden.
And over against them
Brythnoth stood ready,
Silent and sullen,
Brythnoth and his heroes.
Cried to his war-band
Brythnoth the head-man:
" Raise ye the shield-fence,
Hold yourselves ready
'Gainst these our foemen."

* * * * * *

Then came the conflict,
Glory of chieftains,

Doom-hour upon them
To many a hero.

* * * * * *

Over the war-play
Hung the swart raven,
And that horny-nibb'd bird,
The greedy war-hawk,
With ashen feathers,
Waiting for quiet.
Skulked through the marshes
That shadowy beast,
The wolf of the wold.

* * * * * *

Never aforetime
Harder fought battle
Was in this island
Since hitherward roaming,
Fallow seas over,
Engle and Saxon
Came seeking Britain.

Nature Study for May and June, Sixth, Seventh, and Eighth Grades: (KATHARINE M. STILWELL.)

PLANT AND ANIMAL LIFE.

The study of germination has been carried on through the month of April by the use of window-gardens, the hotbed experiments at home, and observations in Lincoln Park.

Weekly records of the landscape, the appearance of the tree selected for special study, the growth of the plants, and the development of the buds have been kept in painting and writing.

Weather conditions were recorded and the records used in a study of the relation between the conditions and the rate of plant growth. The records of heat and moisture for the month were compared with the average for the last twenty years. This average was computed by the pupils from the data in the U. S. Meteorological Summary.

Much interest is manifested in the animal life of this region. Some of the pupils have formed a club which meets in the early morning for the observation of birds. The birds seen are further studied from the specimens in the museum and from the books in the library—each pupil keeping a record, by paintings, of the birds he has seen.

In May, work in all these directions will be continued, but by a study of more specific problems.

Many of the pupils have been able not only to plan the experiments which answer the questions suggested, but also to discover new problems. But here, as elsewhere, are some pupils who need definite directions. To help them, the outline and directions which follow have been prepared.

It is not expected that every pupil will do all the work indicated, but each pupil will select some topic for investigation.

OUTLINE.

I. A study of the plant life of typical areas of this region—park, garden, meadow, ravine, and swamp. Illustrations in color. Collection of specimens.

II. A study of the plants in these areas in relation to moisture, soil, light, heat, and air.

1. Relation of moisture to plant growth.

(a) Source of moisture supply; monthly rainfall and its distribution throughout the year.

(b) Adaptation of plant to moisture conditions; observation of root and leaf structure.

(c) Transpiration; quantity of water used by different plants. (Experiment.)

(d) Water accessible to plant; soil moisture. (Experiment.)

2. Relation of different soils to plant growth.

(a) Soil texture; relation to moisture content. (Experiment.)

(b) Soil constituents; physical analysis of soil. (Experiment.)

3. Relation of light to plant growth.

(a) Part directly influenced by light; study of foliage leaves.

(b) Methods of reaching light.

(c) Leaf arrangement and form.

(d) Formation of starch in foliage leaves.

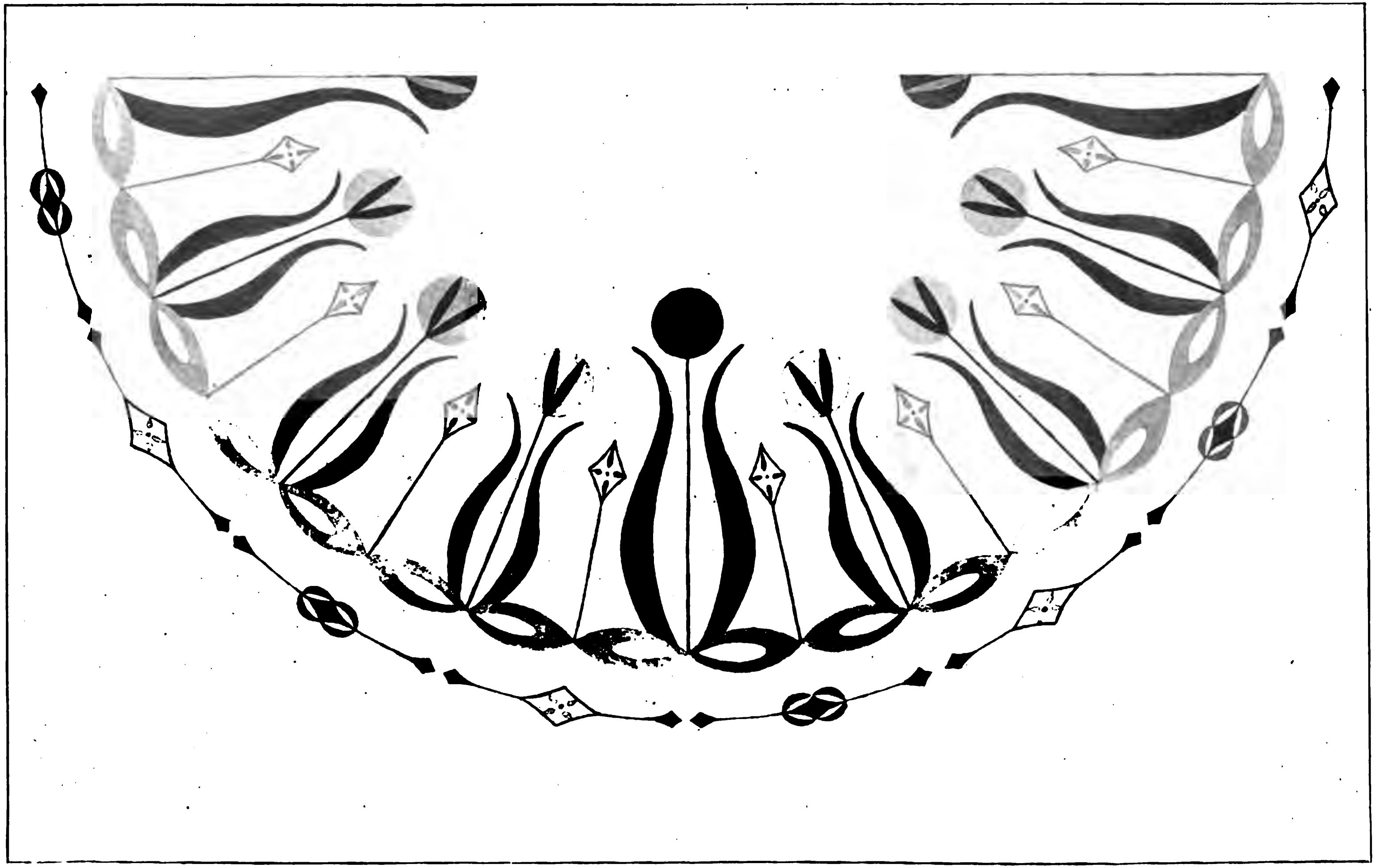
4. Relation of heat to plant growth.

(a) Temperature of the air.

(b) Temperature of the soil. Note especially during the flowering period. Study this question in relation to the water supply.

5. Relation of air to plant growth.

(a) Plant respiration.



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Work of High School

Vol. I. No. 10.

The Course of Study

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AND PARENTS

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VOL. I. JUNE, 1901. No. 10.

THE COURSE OF STUDY

A PUBLICATION FOR TEACHERS AND PARENTS
ISSUED MONTHLY—TEN NUMBERS A YEAR.

Suggestions as to the Study of Psychology*

Francis W. Parker

XIV.

TESTIMONY OF THE SENSES. Whenever I see an object, I am conscious of something. That something of which I am conscious is not that object. That object is not in my consciousness—but something is. What? Nothing outside of my consciousness can be in my consciousness. "I see" means "I am conscious of *something*." I do not act upon the object I see. If I did the action would change the object. The object acts upon me and changes my consciousness—I am conscious of the change—that change is an image *corresponding* to the object that I see. I know an object because I have an image of that object. I can recall and hold in my consciousness the images I have acquired by seeing. Seeing is imaging.

I close my eyes and touch various objects. I know what they are by the sense of touch. In order to know what these objects are I touch them. "I touch" means "I image." I hear sounds—I know the sounds because I have images corresponding to them.

Recall sounds, tunes, voices, etc., that you have heard; make the same tests with taste and smell.

Every act of the senses of which I am conscious is an act of imaging.

XV.

HOLDING IMAGES. Perform a series of experiments by holding images in consciousness. What happens when you hold an image? How long am I able to hold an image? Does it change all the time I am holding it? How does it change? Recall a story. Can I image it from beginning to end? You forget some part of the story. What is forgotten? The coming of new elements and new images into the image while you are holding it is called growth—the image grows.

Extracts from Notes on Psychology

MAUDE GREENE

Imagery in Related Subjects

The coming in of all images pertaining or relating to one image to strengthen it is called correlation. The Herbartians call it apperception. Others call it association.

Example: The psychological function of physiography is imaging the earth's surface. The psychological function of geology is to strengthen this image by images of processes of formation. An image of a mountain would be strengthened by an image of the way in which it was formed. The psychological function of mineralogy is to strengthen the image of the earth's surface by images of materials which make up the surface. The psychological function of meteorology is to strengthen the image by images of the causes of changes in the earth's surface. In physics and chemistry we find the laws and processes of change. These strengthen the image of the earth's surface. The

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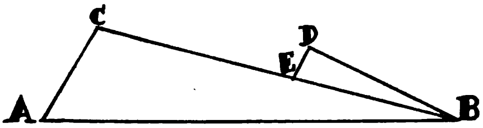
Note by the Editor: I would suggest to our subscribers that they bind the numbers of the COURSE OF STUDY into one or two volumes. They will always be valuable for study.

agent of all change is heat. The function of these things is life. We image the earth's surface in relation to its function, life. These images are botany, zoölogy, and anthropology.

All study is infinite. We cannot study the tree without studying all of the above-named subjects, for we cannot have strong images of the tree without images which relate and pertain to it. The related images include images from all these subjects of study. The confusion has resulted from classifying and isolating these as separate and distinct studies.

Illustration : As a help to the imaging of North America we may use this geometrical figure, remembering that points, lines, and surfaces are only devices which the mind uses to assist in imaging, and that they do not exist out of the mind.

AB represents sea level. C is a point in the Rocky Mountains. The line CB is without modification at the St. Lawrence basin. It is modified by break represented by EDB at the Appalachian Mountain system, the line ED being a part of Mississippi River basin. The line ACB is constantly wearing away; when it reaches line AB, water level, the continent will disappear.



A knowledge of the way the earth's surface has been made is a help in imaging it. A knowledge of how mountains have been formed might be a help in imaging them. The principal agent of mountain-making is gravitation.

Four ways in which mountains have been formed:

1. By volcanic action.

2. By folding; great pressure coming at two different places. The crust between bends or folds.

3. By faulting; great pressure forcing crust down and leaving high walls around it.

4. By erosion of land; leaving flat-top mountains, called relicts.

We can study only changes. Logically we come to the causes of these changes and to the law of all changes. The causes of these changes are heat and gravitation. The study of these laws is physics and chemistry.

Illustration of correlation between geography and history: Question: Why is the northeast coast of the United States a rocky and wearing one, while the southeast coast is a building one?

Answer: The Arctic current comes close to the northeast coast, and wears it away. The Gulf Stream is farther from the southeast coast, and it brings a vast amount of sediment with it, the greater part of which is furnished by the Mississippi River. This difference in the coast has had a great influence on industries of the two sections, and consequently upon their history. The fine harbors in the northeast coast have developed commerce, and the rocky soil of this region has made manufacturing necessarily its principal industry. The low coastal plain on the south has made agriculture its principal industry and cotton its chief product. Cotton was responsible for a vital movement in the history of the United States. This land wearing and making influences history The great icebergs coming down from northern glaciers meet, when they get near Newfoundland, and as they melt they deposit the material they contain, and form the shoals or banks over which fish are easily caught. The fisheries become the great industry and wealth of this land, and a great influence in its life and destiny.

Question: What helps have you derived from this study of psychology as related to geography?

Answer: I can see that it has all been of great benefit to me in helping me to image North America as a piece of land rather than a map. At first I thought the geometrical figure no help at all, rather a confusion, but now I begin to see it as a help. This thought of imaging the land as I studied it has given me an entirely different idea of study, and particularly of teaching. I begin to see that teaching is the presentation of conditions most conducive to the growth of images. Heretofore my idea of teaching was to hear lessons carefully, patiently, and conscientiously, explaining everything I could; but the revelation leaves me appalled at the magnitude of the undertaking.

Question: Is the map drawing and modeling a help in the imaging of the continents? As we draw or mold do we image the country we are making?

Answer: I think I am beginning to image it to some extent before I draw it, and afterward; but during the process of either molding or drawing I am so concerned with the mechanical difficulties that they absorb my attention.

Expression in relation to imaging: So many of my images are very vague and indefinite that I begin to think it is because they were never expressed. Expression was not a feature in my education, and I think I never was educated. There was no necessity for a strong image in the régime under which I studied, because no expression was asked for. Expression demands a strong image, and cannot be had without it. Expression brings the growing image. I thought I had a fairly strong image of the surface of Mexico until I began to model it. Then I had to go over and over all I had heard and seen for the improvement of my image. I find the strongest images I have ever had were those gained out of school, but I never realized until to-day that the reason is this—that I executed or expressed them. I did not need strong images in order to pass my examinations and get high marks, and that is what I worked for in school. We can do nothing without first imaging. It follows that what we have executed or done has required the strongest images. When I have planned and thought and executed for my household, I have had the strongest images. I had to image when I prepared and served a dinner or directed it. I think I know now one reason why I always disliked history and thoroughly liked any sort of mathematical work. History was merely a memorizing of statements for me. Arithmetic, algebra, and geometry gave me something to work out. The test of the strength of the image is expression. Even the most general form of expression, speech, reveals the weakness of the image.

Discussion: How can one gain strong images?

I cannot tell, but I feel sure that expression is not merely a test of a strong or a weak image; it is also a means of getting strong images. For example, we went to the conservatory to paint the banana tree. I realized when I came away that if I had learned nothing about drawing or painting, I had learned much of the banana tree. The date palm we did not try to draw, but I was much interested in it, having never seen one before. To-day, I cannot recall the form or appearance of it. This shows the relation of expression to the gaining of strong images.

The strong image is also gained by thinking out processes for one's self, by reaching conclusions after a process of reasoning, instead of having the conclusion of others presented first. For example, in our history work I know the images that I hold of the stages and development of primitive man, which I gained from thinking about it myself and discussing it in the class, are much stronger than if I had read these statements and learned them, or if some one had told them to me.

Note: I never was asked to think or give an opinion of my own in my previous school-work. I cannot remember of ever being asked for my own opinion on any subject. When I first heard all of this discussion of strong images I felt discouraged, realizing how weak and vague my images had always been, and I felt that I never could teach with such a stock of attenuated images; but now I think my lack might make me all the more zealous that children should never have so dead a thing thrust upon them in lieu of teaching as I have. My idea of teaching is revolutionized.

Notes on Plan for the Study and Record of Pupils

*Francis W. Parker

The purpose of this plan is, primarily, to enable teachers to study their pupils. The record of teaching and training must be read in the body, mind, and soul of the pupil. Each item in the blank is a standpoint of observation from which qualities of character may be rightly estimated. Experience proves that most teachers, no matter how sound their theories, are dominated by the knowledge and skill ideal; they fix their minds unwittingly, and often unwillingly, upon definite amounts of knowledge, and not upon qualities of character. To change from the old ideal to the new means the breaking up of the inveterate habit of holding knowledge as the aim of teaching, and substituting therefor the new and living way of charac-

PLAN FOR THE STUDY OF PUPILS

I. Motive as Manifested in	II. Intellect.	III. Body.	IV. Expression.
1. Personal influence upon the class. 2. Personal influence upon the school. 3. Courtesy and politeness. 4. Kindness. 5. Genuineness and honesty. 6. Responsibility. (a) Trustworthiness. 7. Moral courage. 8. Respect for the rights of others. 9. Helpfulness. 10. Taste. 11. Cheerfulness.	1. Attention, or Imaging. (a) Correlation of images. (b) Observation. (c) Hearing language and study. (d) Reading and study. (e) Analysis. (f) Comparison. (g) Judgment. (h) Inference. (i) Casual relations. 2. Originality. (a) Creative power. (b) Tact. 3. Will, as manifested by persistence in study. (a) Effort to improve. 4. Judgment in measuring quantity. (a) Reason in applied mathematics.	1. Health. 2. Care of Health. 3. Cleanliness. 4. Nutrition. 5. Habitual Posture. 6. Senses. (a) Sight. (b) Hearing. 7. Motor Control. 8. Rhythm.	1. Voice. 2. Singing. 3. Speech. (Thought.) (Technique., 4. Oral Reading. (Tho.) (Tech.) 5. Dramatic Power. 6. Writing. (Tho.) (Tech.) 7. Language. 8. Making. (a) Woodwork. (Tho.) (Tech. (b) Textile. (Tho.) (Tech.) (c) Modeling. (Tho.) (Tech.) (d) Painting. (Tho.) (Tech.) (e) Drawing. (Tho.) (Tech.) 9. Housekeeping. (a) Cooking. (b) Cleanliness. (c) Neatness. (d) Attention to Details. (e) Skill.

Suggestions for Abbreviations:
E = Excellent G = Good P = Poor
V G = Very Good F = Fair V P = Very Poor

ter-building. This radical change demands steady and prolonged concentration upon the natures, instincts, tendencies, and characteristics of children, to the end that the one thing needful—character—be developed.

This blank is, then, for the self-criticism of the teacher. The first and last duty of the teacher is to acquire skill and efficiency in the art of arts, teaching. To this purpose every energy should be bent, every thought tend, all study culminate. Within just limits the faults of the pupil are manifest signs of inefficiency on the part of the teacher. Insolence, impertinence, indifference, and inattention are the negative results of ineffective teaching and training. The proof of this assertion is that another teacher may have nearly perfect order with the same pupils.

All the richness and fullness of subject-matter, all the modes of expression, the strong stimulus and strong incentives of community life, the ever-active instincts of children, the children's craving for work, their hunger for knowledge—all these every teacher has at his service, *if he will use them.* The teacher has no ground *to go over,* no definite quantity of knowledge and skill to teach. He has only one thing to do, and that is to present the right conditions for the evolution of the qualities of righteous character. The long pathway that leads up to the art of arts is concentration upon the character of the pupil.

A second use of this blank is mutual aid on the part of the teachers in a school in understanding their pupils. Differing judgments of pupils on the part of teachers should lead to a mutual understanding. A difference in opinion may be a difference in the quality of teaching, and it may be a difference in discernment of character.

It is necessary for the principal of a school to have reports on the pupils in the school, in order to make recommendations to parents, and to suggest better means for the growth of pupils. Teachers should mark only those qualities of which they are sure. They should do nothing by guess. If they are not able to mark any one quality here put down, they should make further study of the pupil.

The moral, mental, and physical qualities are grouped opposite each other in the blank, so that the attention of the teacher may be easily called to their relations.

The abbreviations used are simply for economy in reporting. This blank is never to be seen by the pupil, nor even known to him, and there is, therefore, no danger in it of a false stimulus.

Space is left at the bottom of the blank for anything the teacher may wish to write in addition to what the blank calls for.

The blank will be kept year after year, and filed for reference. Special records of pupils may be kept by class and departmental teachers. These will go more into detail than it is possible to do in a report like this.

Finally, this blank is simply tentative. The thought and discussion of all the faculty are to be brought to bear on the devising of a blank that shall be as nearly perfect as possible.

I. **Motive:** Every pupil, like every other human being, is constantly striving to accomplish something, to reach some end and aim, near or remote, bad or good. The being in action, under the incentive of the end to be realized, constitutes motive. To recognize a pupil's motive in one phase, at least, is to know that pupil. The tact to change a wrong motive to a right one is one of the most valuable qualities in the art of teaching; for to induce and cultivate right motives comprehends the whole art of teaching. For lack of something better to do, pupils often try to tease the teacher (a biological experiment). The cure is at hand; decline to be vexed. Pupils like to "show off," to make their mates laugh, etc. Tact in a teacher is to discern immediately the pupil's motive and to change it to that which is good and wholesome.

INFLUENCE UPON THE CLASS. That which above all things tests a pupil's character is his influence upon his mates. His example in work, play, self-control, order, is the main thing to be cultivated. Sympathy, helpfulness, kindness, thoughtfulness for others, are the signs of good influence. As citizenship is the ideal, personal influence is the test of citizenship.

COURTESY AND POLITENESS. The intrinsic quality of order in the school is true, soul-felt courtesy and politeness. Respect for the rights of others, reverence for authority; sympathy for all, and especially for the weak and unfortunate; kindness, interest in the welfare of the community, are the essential qualities of character, all of which spring from courtesy and politeness. A cheery "Good morning," a hearty handshake, a smiling face, all add much to the day's work.

GENUINENESS. Genuineness is the true, honest, independent manifestation of self in thought and action. Its opposite, hypocrisy, is the covering up, the suppression of self, in order to conform to the ideas of others, especially to those in authority. The motive for such conduct is love for approbation, the gaining of favors, high marks, and they desire "to show off."

Lack of genuineness is generally caused by a weakness of will-power.

Hypocrisy is a very common product of the school, and is too often cultivated by teachers. Teachers may like to have their opinions unquestioned, their statements taken without discussion. They often rely upon the words of the text, hold them as infallible, and insist upon their literal acceptation. The innocent pupils soon learn to comply, conform at least outwardly, and never have, much less utter, an original thought. Moral courage is the root of genuineness.

Genuineness is by no means a synonym for goodness. It enables the teachers, however, to understand their pupils, without which very little true progress can be made. Shrewdness, sharpness, acuteness, may be easily developed, but genuine honesty is quite different. It stands among the noblest qualities of character.

RESPONSIBILITY. Citizenship requires the pupil to be responsible for his companions, his class, and for the whole school. This feeling of responsibility is intrinsic to citizenship. Responsibility leads to making one's self the best possible example, by helping others in the best way. A sense of responsibility arouses manliness, self-confidence, and personal dignity. Education without responsibility is impossible.

TRUSTWORTHINESS. Trustworthiness is the outcome of responsibilty. Its main content is honesty. Its realization is through knowledge, skill, work, and faithfulness. Most of all, children like to be trusted. Suspicion of wrong-doing breeds wrong-doing. The students of Dr. Arnold said: "We never could tell him a lie, because he believed all we told him."

HELPFULNESS. Helpfulness comprehends nearly all of the other qualities of character. It demands study on the part of the helper of that which is most needed by others, for knowledge and skill are essential to efficient help. The art of teaching may be summed up in one purpose—the cultivation of the spirit of helpfulness.

TASTE. Good taste, in a broad sense, comprehends a number of virtues. On one side is the love of the beautiful—taste in nature and art—admiration for the best painting, sculpture, literature, music, decoration, dress; discrimination between the beautiful and the ugly, between dirt and disorder, and cleanliness, neatness, and harmony. On the other side there are the recognition of truth, honesty, reason, and all the intrinsic virtues of noble character.

II. **Intellect:** ATTENTION, OR IMAGING. Strong mental images, and images growing strong, form the basis of all intellectual growth. Images may be classified as follows:

1. Images that correspond to objects in the external world; acquired by observation.

2. Images of objects that lie beyond the sense grasp; acquired by hearing language, reading, pictures, maps.

3. Images formed by constructive and creative imagination.

The function of language, oral and printed, is to unite images that *have already been in consciousness.* If such images are strong, the new (united) image will be strong; if they are weak, the new image will be weak.

ANALYSIS. Analysis of external objects depends entirely upon the images in consciousness; indeed, there can be no such thing as a growing image without analysis.

COMPARISON. Any two objects compared must have their corresponding images in consciousness. The value and thoroughness of the comparison depends upon the strength of the images.

Judgment and all the processes of reason have their foundation in strong images.

CORRELATION. Correlation is the uniting or merging of congruous images. If images are strong, they move together into our apperceptive mass. This merging or growing of strong images is thoroughness.

CAUSAL RELATIONS. Strong images form the initial steps to the processes of reasoning which lead to a knowledge of causes. The images are the knowledge of the effects that may lead one to find the cause.

PERSISTENCE IN WORK. No mark of intellectual power is more promising than the habit of hard educational work under the right motive. Pupils who work out their own problems with little or no help, who overcome difficulties and stick to tasks that are not in themselves pleasant, who do the work assigned them, and far more, are on the road to successful lives. Teaching consists in inducing pupils to do excellent educative work.

MEASURING QUANTITIES (ARITHMETIC). Measuring quantities is intrinsic to all true study. Every branch of study demands constant measuring for the growth of clear images. The isolation of arithmetic in school work makes it difficult for teachers to use arithmetic properly.

Pure numbers require the learning and remembering of numerical facts. Measuring quantities demands imaging, analysis, comparison, and the exercise of reasoning power.

III. **The Body:** Defects of the body mean, in general, defects of the mind. No teacher can truly help a pupil without some knowledge of the bodily conditions named.

IV. **Expression:** Through expression in all its modes the teacher may read the characters of his pupils and understand their moral, mental, and physical strength and weakness. Each mode of expression reveals some phase of character. Expression has a powerful and indispensable reaction upon thought. Expression is essentially self-realization.

Colonial History

Emily J. Rice

The value of a history course in school depends very largely upon the relation it bears to the vital experiences of the children. If they are given an opportunity to do social work, they wish to know what they are doing, and why they are doing it. The first great mission of the school is to give the child something to do, and the second is to fill that work with meaning by showing its relation to the larger movements of life. It is more important that the material of the history lessons should have this close connection with the social activities of the school than that any logical order of the subject-matter should be considered. In fact, the kind of work being done suggests both historic subject and order of topics.

.Experience has led us to believe that it is well to allow some one art especial prominence in each grade for the sake of carrying on the constructive work more thoroughly than would otherwise be possible. If the children are doing textile work, or making pottery, or learning to print or bind books, they may need a long time in which to secure a good result. When they are putting forth continued effort in a particular direction, study of the history of that activity shows the value of their labor in terms of the great field of human endeavor. This plan involves the selection of such periods of history for study as have the most direct bearing upon the social occupations, and presenting the topics in the order suggested by the problems of these occupations. It changes our point of view in teaching. We consider no longer the logical order of the subject-matter, but the attitude of the children's minds in relation to it.

Among the most valuable arts for the children are those belonging to the manufacture of clothing. The textile industry is one of the greatest in our own country, and it is necessary to understand it to get a comprehension of the social situation. By the study of it, children learn that their comfort depends upon the labor of others in fields and factories. By actual work in spinning and weaving, they become able to appreciate the work of the world.

The little children may spin with the spindle and distaff and weave on a simple hand-loom. The children of the middle grades can use the spinning-wheel and the Colonial loom. For these older children, the study of the life of our Colonial forefathers seems especially desirable. This period is a comparatively simple one as far as institutions are concerned. The struggle of the pioneers with the hard conditions of the new environment are those that children can appreciate. The problems of the development of their industries are such as the children can work out for themselves. It is a period of adventure and heroic action. Both from the standpoint of industrial life and qualities of character, it furnishes suitable material for the middle grades.

Outline of Topics for Work and Study

I. Spinning of flax and wool by means of the spinning-wheel. Carding.

II. Weaving on Colonial loom and small hand-looms. Sewing.

III. Study of materials, manufacture, design, and color.

IV. Study of the textile work of Colonial times.

1. Illustrations: objects; pictures; visits to museums.

2. Dress of the Colonists: New England; Virginia; New York; Pennsylvania.

3. Materials and manufacture.

V. A New England community.

1. The home: occupations of the people; family life; houses; food; amusements.

2. A farm: variety of products; physiographic features that have affected industries; labor; life on the farm; education.

3. A village: location; causes of growth; industries; labor; classes of people; social life; education.

4. The town-meeting: effect of economic conditions upon government.

5. Growth of colony from its settlement.

References: Weeden, *Economic and Social History of New England;* Palfrey, *Compendium History of New England;* Alice Morse Earle, *Customs and Fashions of Old New England, Home Life in Colonial Days, Costume of Colonial Days,* and *Children of Colonial Days;* Fiske, *The Beginnings of New England;* Doyle, *English Colonies in America;* Lodge, *English Colonies in America;* Eggleston, *The Beginners of a Nation;* Griffis, *Pilgrims in Their Three Homes;* Coffin, *Old Times in the Colonies;* Hawthorne, *Grandfather's Chair;* Tiffany, *Pilgrims and Puritans;* Hart, *American History told by Contemporaries;* Caldwell, *A Survey of American History;* Davis, *The Physical Geography of Southern New England;* National Geographic Monographs.

VI. A Virginia Plantation.

1. Appearance of plantation; size; vegetation; agriculture; laborers; isolated houses; absence of villages; household industries; education of people.

2. Physiographic conditions that affected the social life of the colony.

3. Geography of the tide-water region; wide strip of fertile soil; piedmont and mountain region; rivers; harbors. Compare with the New England plateau.

4. The Virginia country. Compare with the New England town.

5. Growth of the colony from its beginning.

References: Bruce, *Economic History of Virginia in the Seventeenth Century;* Doyle, *English Colonies in America;* Lodge, *English Colonies in America;* Fiske, *Old Virginia and her Neighbors;* Cooke, *Virginia* and

Stories of the Old Dominion; Hart, *American History told by Contemporaries.*

VII. The Dutch in New York.

1. Dress of the men and women; houses, interior and exterior; occupations; schoolhouse, tea-parties, night-watchman, town-herder, etc. Let the children learn all they can from pictures, and then supplement their observations from Irving and Mrs. Earle.

2. The story of Henry Hudson and the founding of New Amsterdam as a result of his voyage. Motive of the Dutch in settling. Compare with that of the English at Plymouth and Jamestown. Geography of the Hudson and Mohawk valleys. Show how nature made trading and commerce easy. The situation of Manhattan Island—why did New York become the leading city of the United States?

3. Compare the government of the colony with that of Plymouth. The Walloons and Patroons. The Dutch governors, with special attention to Peter Stuyvesant. The Swedes on the Delaware and the English on the Connecticut. Why did the Dutch surrender to the English in 1664?

4. Holland. Show life in Holland by pictures. Study a relief map of Holland, noticing the rivers and the height of the land above sea level. Draw conclusions as to how the land was formed and its quality.

5. Occupations. Result of the geography of the country. (a) Grazing—the Dutch cattle are some of the finest in the world. Why? Show picture of Paul Potter's Bull. Dairy products. Leather. (b) Agriculture and horticulture. (c) Commerce—due to what? Why are canals a necessity? Colonies of Holland and how Holland at one time did nearly all the carrying trade of Europe. (d) Manufacturing —functions of the wind-mill. Cloth manufactures. Why is the making of bricks, tiles, and china such an important industry? (d) Fishing —importance of the herring.

6. Cities. Have the children get the life in and the architecture of the cities of Amsterdam, Rotterdam, The Hague, Delft, Leyden, from pictures. Tell simply and forcibly the story of Holland's struggle for liberty, which culminated in the siege of Leyden. Read selections from Motley.

Literature Studies: *Rip Van Winkle* and *Sleepy Hollow*, by Washington Irving.

References: Alice Morse Earle, *Colonial Days in Old New York;* Irving, *Rip Van Winkle* and *Sleepy Hollow*, *Knickerbocker History of New York;* Fisher, *Colonial Customs and Manners;* Winsor, *Narrative and Critical History*, v. 3, 4; Bancroft, *Colonization of the United States*, v. 2; Dodge, *Hans Brinker*, *Picturesque America;* Wright, *Stories of American History*, pp. 292–300; *Artist Strolls in Holland*, Harper, v. 66; Higginson, *Young Folk's History;* Eggleston, *History of the United States* (illustrated), *First Book in American History*, *Stories of American Life and Adventure*, v. 54; Gilman, *Historical Reader No. 2*, v. 7, 8; Tuckerman, *Peter Stuyvesant;* Schuyler, *Colonial New York;* Paulding, *The Dutchman's Fireside;* Motley, *Rise of the Dutch Republic*, *Old South Leaflets;* Hart, *Source Book.*

VIII. The Quaker Colony.

1. The old city of Philadelphia. Buildings associated with its early history. Use a topographical map of its site.

2. Biography of William Penn. The Quakers.

3. Growth of colony. Compare with that of the other colonies.

4. Geography of Pennsylvania; effects upon industries and social life.

References: Coolidge, *Early History of Philadelphia;* Fisher, *Early History of Pennsylvania;* Britannica article on Penn, *Harper's Magazine*, v. 65; Coffin, *Old Times in the Colonies;* Hart, *Source Book.*

Geography

Zonia Baber

Since the climate in this latitude renders field-work impossible for the greater part of the school year, it is necessary to have excursions whenever the weather is favorable. Hence, during May and June the seemingly logical year's outline will not be followed by consecutive lessons, but will be interspersed by lessons upon regions visited.

For instance, after a trip to Highwood, where glacial, stream, and lake phenomena are strongly shown, a discussion of the work of those agents was necessitated. But whatever part of the earth's surface is considered, the work of the physiographic agents must be understood in order to appreciate its topography. A student can appreciate with far more definiteness of concept the work done by the great rivers in China or India, for example, after a close study of streams in this neighborhood.

Several all-day excursions are planned for this month. One is to be taken to Barrington, Illinois, to study the glacial terminal moraine; another to Starved Rock, near Utica, Illinois, where erosive phenomena, certain rock formations, and interesting plant life are well illustrated. (The Indian history connected with this region furnishes an added interest.)

Another excursion, to be made by boat down the Chicago River and drainage canal, will afford an opportunity to study certain industrial, commercial, and sanitary aspects of Chicago and vicinity, besides the physiographic phase of the region. Another excursion to Dune Park is desired to note changes since the visit last autumn. Whenever it is possible, two or more excursions to the same or similar regions are highly desirable, since the average student is prepared by the first trip for a much broader appreciation in the second.

In the study of India, outlined below, the student will find Dune Park repeated in the Indian or Thur Desert; Starved Rock, with its physiographic and historic setting, is almost identically repeated in Chitor and Gwalior, and in many other localities.

The canal trip, from the sanitary standpoint, cannot find its reflection in the Orient, but for commercial consideration the search is not difficult.

What seems then, in a certain plan of study, to be an interruption occasioned by out-of-door work, is truly a means of illuminating the subject under consideration.

If the field-work were feasible at all times it would be easy to plan a year's course of study upon field observations; but unforeseen weather conditions, together with the long winters, necessarily confines the field-work to a few months at the beginning and close of the school year.

Pedagogic School: INDIA.

I. Influence of India on present international problems.

II. Conditions which have contributed to the development of the Indian civilization.

1. Location in relation to other nations.

2. Size and shape.

3. Topography; its influence upon climate; products and people; Peninsular region or Dekkan; Indo-Gangetic alluvial plain; Himalaya and Suliman mountains. (See physical map.)

(a) Mountains. Influence of Himalaya Mountains, Aravalla Hills, Vindhya Range, Satpura Range, Western Ghats, Eastern Ghats.

(b) Rivers: Location and value of Indus, Ganges, Brahmaputra, Narbada, Godavari, Kistna, Cauvery. Which rivers have sacred influence? Which have delta plains? Which have valleys corresponding in shape to those of North Shore? Influence of Ganges delta plain on development of India? Commercial aspect of each of the above rivers. Use in irrigation.

4. Geology: Influence upon topography and products. Location and extent of alluvial, basaltic, and archæan formations. (See geology map.)

5. Rainfall and climate.

(a) Continental climate, December to May, during northeast monsoons. Effect of the Himalayas and Iran.

(b) Oceanic climate, June to November, during southwest monsoons. Effect of Indian Ocean.

(c) Account for cold weather, January and February; hot weather, March to May; rainy season, southwest monsoon, June to October; retreating southwest monsoon, or so-called northeast monsoons period, November to December.

(d) Effect of Himalayas, Western Ghats, Arakan Mountain ranges on rainfall.

(e) Locate areas of constant rainfall; areas of constant drought; areas of uncertain rainfall. Locate regions most liable to famine, and explain cause.

(f) Irrigation.

(1) Source of moisture: rain, rivers, underground reservoirs, lakes, and surface reservoirs.

(2) Locate regions where rain is sufficient for crops; "black cotton soil" regions, which act as sponge in retention of moisture; regions where wells are employed, where surface reservoirs are used. (See geological map.) Why are tanks and lakes generally in the archæan? Wells in the alluvial tracts? Why neither is necessitated in the trap area?

6. Crops.

(a) Food crops: wheat, rice, millet, barley, sugar, spices, etc.

(b) Oil seeds: linseed, rape, and mustard, castor, sesamum, ground nut, etc.

(c) Fibers: cotton, jute, hemp, rhea, silk, wool, etc.

(d) Dyeing and tanning materials; indigo, safflower, etc.

(e) Drugs and narcotics: opium, tea, coffee, tobacco, cinchona, Indian hemp, vines, and other sources of alcohol, etc.

(f) Miscellaneous products: cutch, lac, wild silk worms, india rubber, palm sugar, cocoanut, musk, myrobalan, etc.

7. Forests. Why has India a comparatively small area of forests? Locate regions where deodar, sal, teak, sandal, caoutchouc, prevail. (See forest map. *Statistical Atlas of India*, 1895.)

8. Animals—domestic and wild. Predominance of buffaloes and cattle in domestic use. Influence of religious beliefs in preserving wild animals.

9. Economic minerals. Locate regions which produce coal, iron, oil, and tin.

10. People. Race, appearance, dress.

(a) Cities. Account for few large cities in India. Contrast urban population of India 5 per cent with the urban population of England 53 per cent; meaning of each.

(b) Languages. Account for the existence of eighty languages in India. Where are the Dravidian languages principally found? The Aryan languages?

(c) Religions: Hinduism, Buddhism, Janism, Sikhism, Mohammedism, Animism, Christianity. (See map of prevailing religions. *Statistical Atlas of India*, 1895.) Effect of religions on industries, society, architecture, and art.

11. Political divisions. Bengal, Rajputana, Northwest Provinces, Panjab, Sind, Bombay Presidency, Madras, Haidrabad, Mysore, Tranvancore and Cochin, Kashmir, Assam, Burma, Nikobar Issakadiv and Maldiv Islands.

(a) Relation of native state to British government.

(b) Government of British India.

(c) Non-British states in India. Locate Portuguese India, French Possessions, Nipal and Bhutan. Why not under British rule?

12. History. Brief story of India. Compare with the history of China. Influence of religion on the lack of historic interest of the Aryan Indians. Has British rule been beneficial or detrimental to India? Why? What is your solution of the famine trouble?

Expression: Model, draw, and paint certain parts of regions visited. Model, draw in color relief map of India in dry and wet seasons. Draw a typical Asiatic Indian.

Materials: The subject will be illustrated by photographs, stereopticon views, products of India, manufactured and natural, books, and work of Indian school-children.

References: *Statistical Atlas of India*, 1895;

Mill, *International Geography; Stanford Compendium*, Vol. II; Reclus, *Earth and its Inhabitants*, Vol. III; Hunter, *The Indian Empire* and *Brief History of Indian People;* Murray, *Hand-book of India, Burma and Ceylon;* Alfred Lyall, *The Rise and Expansion of the British Dominion in India;* Fergusson, *History of Indian and Eastern Architecture.*

Mathematics

George W. Myers

Pedagogic School

The pendulum of method in arithmetical teaching has swung from the extremely concrete to the extremely abstract within the last few years. The vibrations are moreover continuing at present, but with ever-decreasing amplitude. It is to be hoped that the damping effect of mutual criticism will in the near future enable us to fix our attention upon the position of stable equilibrium.

When this golden mean has been found we shall have learned how to secure to the pupil, in an economical way, the necessary knowledge of the laws and uses of abstract number without either hide-binding his thinking with a surfeit of abstractions, assimilable only by a mature mind, or lumbering his mental movements with a useless burden of devices for "concreting number" long after their period of serviceableness has passed. We shall then be able to admit that number is a purely "mental product, put into things and not got from them," and still to see that to use things and not to be used by them number *must* be put into them, and that for the bulk of our pupils a knowledge of number and its uses is of value in direct proportion to their skill in "putting it into things."

The school can render no more valuable service to society in general to-day than to discover a way in which the boys and girls who attend may be trained into a facile working knowledge of elementary mathematics. If this way could be found, mental discipline, the inducing of judgments of magnitude, culture, important as they all are in themselves, would come as by-products in the evolution of the child into the efficient man, who would be ready, because able, to perform the service our particular time demands. Such practical mathematics is needed in our business houses, with our railroads, and in our workshops, factories, scientific laboratories, on our farms, and wherever the great work of production is in progress—most of all, in the schoolroom.

The objection quite generally made to such mathematical work in the grades as elementary surveying, questions connected with simple systems of forces, is that it is not the purpose of the public school to teach professional knowledge. This objection can hardly prevail against the argument that useful knowledge will furnish as sound a basis for culture as will useless. Such work does not seek to train the pupil for a profession, but merely to give him an insight into the reality of the need for arithmetic, algebra, and geometry in modern life; to give a view of a fuller and more vital phase of need than is furnished by the keeping of accounts and the demands of general training.

The most formidable obstacle in the way of introducing such practical work is the inability of teachers to carry it out. Most grade teachers, being women, have not been under conditions which make the stress of the mathematical needs of the industrial professions keenly felt, and are likely to infer that there is no such need which they can supply. This situation can and will be removed in time, though time will be necessary to overcome the inertia of present conditions. An influx into the intermediate grades of a large number of strong and wide-awake men teachers would go far toward relieving the difficulties of the present situation.

To the teacher of arithmetic, it is not so much a matter of choosing between the concrete method of presentation and the abstract method, both of which may be equally artificial, as it is of choosing between the natural method, based upon approximately real conditions, and the unnatural method, based upon purely artificial conditions. The chief advantage of number to man is to enable the mind to move faster, farther, and deeper into things than it can do without it. To hold the mind bound to things too long is to crop its wings and to compel it to walk when it might fly. The mental step from things to thoughts should be taken as soon as it can be taken surely, though no sooner. It is beneath the dignity of the true teacher to become a devotee and proselyte to any method, as such.

One function of number is not ordinarily considered, or is insufficiently considered, by elementary mathematical teachers: viz., its *use in indirect measurement*. As a matter of fact, in most cases where the mathematical need cannot be evaded, a magnitude is to be ascertained which cannot for physical reasons be obtained directly. It may be a line, obstructed by a hill, a building, a body of water; it may be the radius of the earth, distance to the sun, or other heavenly body. Difficulties arising from such sources are imperative in their demands for mathematics. Some related magnitude must here be measured and the desired one inferred through some known relationship. This is the greatest of all the uses of mathematics. Problems in elementary surveying furnish a good beginning for this sort of practice. Every grade teacher, beyond the fourth, should know something and teach something in this line.

The classes will continue the topographic map through June as occasion permits.

For classroom work the following outline will guide:

I. Quantity.

1. Constant; e. g., height of a tree at a given instant.

2. Variable; e. g., height of a tree at any time.

II. Number.

1. Constant, or fixed (arithmetical number).

2. Variable.

III. Constant quantity.

1. Origin, nature, and use.

2. How it gives rise to number.

3. Possibilities of constant quantity.

(a) May be subdivided, or parted; that is, may be measured.

(b) May be used a number of times; i. e., may be used to measure another quantity.

(c) Ideas of constant number and measurement arise from these two possibilities.

IV. Measurement.

1. Counting.

2. Direct measurement.

3. Indirect measurement.

V. Operations growing out of:

1. First possibility.

(a) Subtraction; unequal parts.

(b) Division; equal parts.

2. Second possibility.

(a) Addition; unequal addends.

(b) Multiplication; equal parts.

VI. Fractions, both common and decimal.

1. How and when taught.

2. Written forms.

3. Operations upon.

VII. Longitude and time and compound numbers.

1. How and when taught.

VIII. Percentage and simple interest.

IX. Geometry and algebra in the grades.

X. Discussion of place and relation of field-work in the grades.

Pedagogic Course in Nature Study

Charles W. Carman

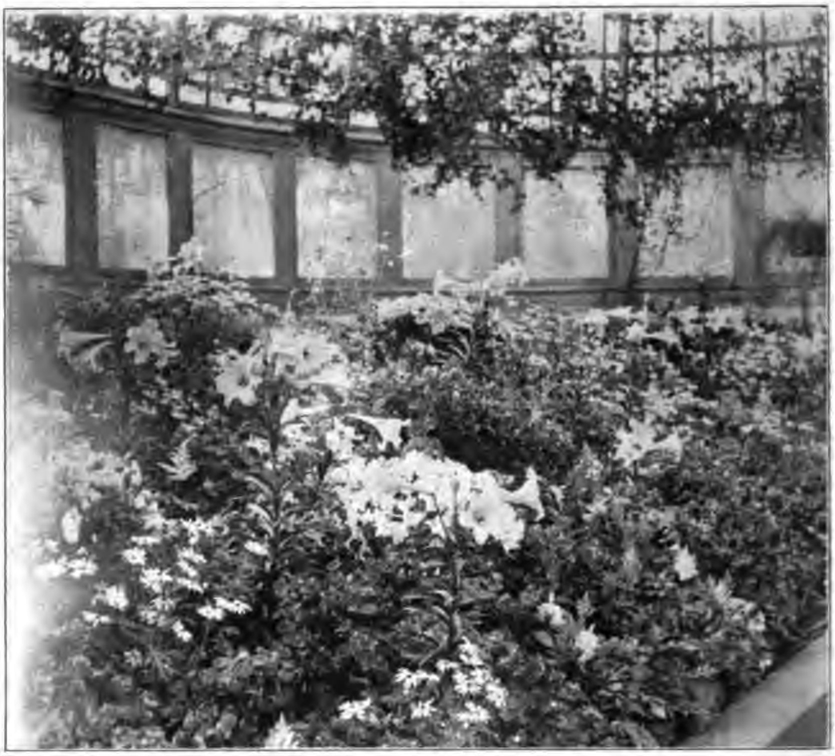
LINCOLN PARK. MAY 11TH

Owing to the continued cold during the month of April and early part of May, the development of vegetation has been unusually retarded. In order to prepare the student to see as deeply as possible into the extensive work of changing a landscape from its winter condition to that of a fully developed vegetation, it has seemed necessary to make a microscopic study of plant development. Accordingly, laboratory work has alternated with observations and sketches in Lincoln Park.

A quantity of spirogyra was gathered. The long cells were worked out under the microscope and sketched. The starch formations were identified, sketched, and tested with iodine. The fibro-vascular systems were then studied by teasing out bundles taken from the corn-stalk and celery. Long, slender tubes, with strengthened walls, were clearly seen by magnifying three hundred diameters. A quantity of sap was then expressed from a number of young corn-stalks, and gently evaporated until crystals were formed. These were examined microscopically and then subjected to Fehling's test for sugar. Starch was then changed to sugar by adding to thin starch paste a quantity of barley ground in a mortar. After standing in a

LINCOLN PARK, MAY 15TH

LINCOLN PARK, MAY 18TH



LINCOLN PARK, MAY 18TH

temperature of 80° to 90° for half an hour or less, Fehling's solution showed the presence of sugar. The reconversion of sugar into starch was shown by scraping bits from the potato and examining under the microscope. The grains were sketched and tested with iodine. The starch grains in wheat and corn were similarly examined and tested.

It is planned to follow the examination of the various structures of the plant, keeping constantly in mind the complete cycle of the plant's life. After completing some of the changes taking place in the leaf and stem, study was begun upon the roots. Cross sections were prepared and examined with the microscope. The seeds of the elm, maple, and box-elder were then collected, examined, and sketched.

Much of the time during the month of June will be spent in Lincoln Park *reading* into the vegetation the processes that were worked out in detail in the laboratory.

The theory continually held before the mind of the instructor, while developing the present course, may be formulated as follows:

1. The encouragement of accuracy in observation.
2. The cultivation of a desire to look beneath the surface of things in searching for truth.
3. The encouragement of a desire to collect a large number of accurate observations before attempting generalizations.

Speech, Oral Reading, and Dramatic Art

Martha Fleming

During the first half of last month, the pupils of the elementary school were working on the following programme, which was given to their friends. This was the culmination of their study on these subjects.

1. Spring Song....................Caesar Cui
2. Julius Caesar. Act I., Scenes I. and II. ....Seventh and Eighth Grades
3. Music ....
4. Rip Van Winkle..............Fifth Grade
   A play arranged by the children from Washington Irving's story of Rip Van Winkle.
   Incidental Music { Grieg / Rheinhole
5. Hunting Song of Seeonee Pack..... ....Eleanor Smith
6. The Adoption of Mowgli into the Seeonee Pack: A dramatization by the children from Rudyard Kipling's *Jungle Book* ....Third and Fourth Grades
7. Earth's Resurrection, Trio.......Jasperson
8. The Sleeping Beauty, Pantomime.... ....First and Second Grades

Prologue
Scene 1. The Christening—Music..Mendelssohn
"Through the House," Trio ....Mendelssohn
Scene 2. The Enchantment—Music.....Wagner
Song....................................Reinecke
Scene 3. The Awakening—Music.....Rubinstein

"And o'er the hills and far away
Beyond their utmost purple rim,
Beyond the night, across the day,
Thro' all the world she followed him."
—*Tennyson*.

The following is a report of a rehearsal taken from the Chicago *Tribune* of April 28th. It was written by Cora Handy of the Pedagogic Class.

Kipling's Jungle-Book Dramatized by School Children

At the Chicago Institute the children in the Third and Fourth grades have dramatized part of Kipling's *Jungle Book* as a part of their daily lessons. Not only is the story a new theme for dramatic form, but the method of procedure which the children have taken is decidedly novel.

The adoption of Mowgli into the Seeonee wolf pack is the subject that the boys and girls are representing. This is done in two scenes, the first being laid in father wolf's cave, where Mowgli obtains refuge from the tiger, Shere Khan, and the second scene is upon the Council Rock, when Mowgli is formally adopted into their pack by the wolves.

All of the work has been done by the children themselves, Miss Fleming and Miss Van Hoesen taking no more part in the various discussions arising than any of the children. In one way the story lessened the difficulties attached to dramatizations as a rule by the fact that the text is almost dialogue form in the original. The speeches are all taken directly from the book, with no additions, only an occasional cut being necessary.

First, the story was read to the children several times, as they were greatly interested and clamored for it again and again. The idea that they could act the story themselves came from the children. This was not their first experience of the kind, for the dramatic is one of the foremost modes of expression at the Institute. The children were quick to see the possibilities which the *Jungle Book* offers in this direction.

Each Wrote Drama

As they were all eager to carry out the idea, each one wrote out the story as he thought it should be acted, giving the speeches, stage setting, and costuming necessary. These were considered by the children, and finally together they reduced it to what they thought the best form.

After they had decided upon the number of scenes and their location, the first acting began, and the greatest enthusiasm was aroused. They wished every particular to be in full accordance with life, and necessarily this involved much labor, as Chicago boys and girls are not likely to know all the details necessary to represent wild animals in an Indian jungle. When the Kipling text would not help them, trips were made to Lincoln Park, where the animals were interviewed personally as to their habits and characteristics. If a discussion arose as to just how a wolf sits, or if Baloo did not know exactly in what way to manage his feet, the children watched the bears and wolves in their cages. They learned many little mannerisms of the beasts in this way, too, and they are careful to represent these to make their story as complete as possible.

For Bagheera to make the panther's spring into the circle on Council Rock required much practice and frequent visits, but this has been accomplished in a truly panther-like manner. When Baloo addresses the wolf pack, speaking in favor of the "man's cub," it is easy to imagine a big brown bear really there. It was not easy for the children to decide which ones they thought were most fitted to take the various animals' parts, so each one took them all at different times and then they were able to judge from seeing many act.

Cave Made of Chairs

Four of the youngest children represent the little wolf cubs, and at the beginning of the scene they are asleep, huddled together with mother wolf, father wolf lying a little way from them, also asleep. As it grows dark they slowly awake, and father wolf announces his intention of going to hunt, when Tabaqui, the jackal, comes to the cave, made of chairs, and tells them that the terrible Shere Khan is going to hunt near there that night. The little boy playing Tabaqui scuttles across the floor in a fashion truly jackal-like, while the two older wolves glare at him, sitting wolf-like on their hind feet, while the forepaws are stiffened.

As Tabaqui sneaks out of the cave mouth the stranger in the classroom is startled by the tigerish howl of Shere Khan in the thicket near, which changes into a loud purr that seems to come from every side, ending with a howl which tells the wolves of the tiger spring and slip.

All the children are worked up to a high pitch when the tiger finally shows himself at the cave mouth, demanding Mowgli, who has entered there. Every muscle is tense, and tiger and wolf look at each other with most savage glares. Tabaqui's attitude behind Shere Khan is everything becoming a cringing jackal. It is remarkable how well the children adhere to the Kipling atmosphere.

The first scene ends as father wolf says, "But what will the pack say?" after mother wolf has sent away the tiger and has determined to keep Mowgli as one of her own cubs.

On Council Rock

In the second scene there are many more of the animals than in the first, for the scene takes place on the Council Rock, where every wolf has brought his cubs to the pack to be identified and adopted. The many cubs lie in the center of the group and their parents point them out with pride. The Lone Wolf, Akela, is above the rest on a rock, lying outstretched with his head upon his paws. The big brown bear, Baloo, as the teacher of young wolves, is the only other animal besides the wolves allowed at the council. He lies quiet until the discussion arises over Mowgli, when he arises to the occasion and speaks in his behalf. Mowgli himself is one of the younger children, and he sits playing with pebbles unconcernedly while the wolves debate about his life. Shere Khan is outside the circle, but he makes his presence known by trying to interfere with mother wolf's rights to keep Mowgli. The panther also is in the background; when he comes to buy Mowgli for a young bullock he leaps into the circle of wolves with catlike agility.

At their final giving of the scenes, next Wednesday morning, when friends can come to see them, the children will be dressed in skins and look much more like the animals they represent than ever in rehearsal. But they enter into the spirit of the story so heartily, and are so untiring in their efforts to have it lifelike, that it requires but the smallest bit of imagination to make the spectator believe that he is in the midst of the jungle in the middle of the night. The unhuman cries of the various animals might lead the uninitiated to think himself in close proximity to a zoo.

The Pedagogic classes attended rehearsals of the plays, and many questions arose which have been freely and fully discussed by them. Among these were the following:

What is the value of bringing the children's work to the state of perfection necessary for public presentation? Is it worth the time that must necessarily be given to it? Is it wise to interfere with the regular programme of the school for special training? What are the dangers to the school; to the individual? What is the effect upon the speech, voice, and movement of the children? Upon the reading? Upon the oral reading? Upon the usual morning exercises? Upon the whole spirit of the school? Was it a unifying element? Were there any signs of self-consciousness in the children taking part?

It was decided that these questions could be answered only by watching the children and noting the effect upon their character and daily work.

As stated in the May COURSE OF STUDY, the members of the Pedagogic Class were asked to write recollections of the dramatic plays of their childhood; also observations on the plays of other children. A few of these are given as they were presented. Because of lack of space, and owing to the similarity of many of the experiences, only extracts are given from others.

I.

"As I recall my childhood, I have no recollection of any dramatic plays but those imitative of the life about me. The domestic and social life were the subjects of all my dramatic efforts. Of course the family play was the first of which I have any recollection, the father and mother and the children. Then there was the interminable exchange of visits, the interest of which was heightened by costumes, consisting of long skirts and bonnets, and even such realistic details as veils and card-cases. I can recall a most satisfactory sense of pleasure in the wearing of this costume, and in the actual going to the gate and walking up and ringing the door-bell. As I think of it now, I believe that was the nearest approach to dramatization I ever made as a child. I was always the same personage—a woman whom I very much admired.

"I recall a delight in being the mistress of the household and presiding at all functions, especially at the dining-table. I cannot say whether this was an evidence of the maternal or the 'bossing' instinct.

"In the home life the visits of the doctor, and the subsequent administering of medicine to unruly children, was a feature of play.

"I remember in a vague way of playing church, and later, school.

"All of these plays I suppose in a sense come in the category of dramatic play. I have no recollection of ever representing or being a character except in these plays.

"I have no recollection of ever playing or acting a story of any kind. I do not think any flight of that kind would have received any encouragement or even toleration. I never remember representing flowers, winds, or any such thing, and I did not hear the myths or fairy-stories until I was grown. And yet, with this statement of my own childhood, I want to give my recent experience. When I have seen the children in our own school here dramatizing their stories and acting scenes in their history and literature study, I have been conscious of a very strange feeling—and a feeling that is difficult for me to put into words. It was a recognition—a sudden and almost startling recognition—of an old something, a long-forgotten feeling of my childhood. I saw this feeling named. The thought that came to me when I first saw these children acting these little scenes was, '*There* it is! That is what that something was that I always wanted to do.' And I thought how I would have *loved* that when I was a child, and there was an intense realization of something that had been left out of my life.

"I give this experience of mature years as my reason and justification for giving children the opportunity for expression in dramatic representation."

II.

"Of my own dramatic experiences I remember very little, except that I loved to play that I was another person than myself. That person whom I imagined myself to be was always some one whom I had seen and very much admired, or some one whom I believed had everything that could possibly be desired to make her happy, as, for instance, a princess. I loved also to play that I was a mother of a family. I think that I never played that I was an animal, or personified any inanimate thing.

"I have watched with interest the intense life which one little boy lived in his make-believe world, from the time that he was three until five years of age. He played the greater part of the time alone, although he had two older sisters, and during that time he most often played horse. I have watched him when for hours during a day, and day after day, he would go up and down the road dragging a cart after him, prancing or running as nearly like a horse as possible, or he would stand at the post pawing the ground as if he were anxious to get away.

"One day he came into the house through the back door on his hands and knees. He did not say a word, but in some way he made us understand that he wanted a drink. He was not satisfied until the dipper was set on the floor in front of him, and he could drink after the fashion of a horse.

"That summer we went to the woods on a picnic. During the day L—— disappeared for a few minutes, but very soon we heard him loudly crying, and looking into the woods we saw him standing by a tree, evidently in great distress. We soon discovered the trouble. He had been playing horse, and imagined himself tied to the tree, and so strong was this imagination that when he became tired and wanted to get away, he thought he could not. He would not leave the tree, although we called to him to come, until his mother went through a process of untying him. Until she did, he really suffered.

"One morning he was just ready for his bath, when he made a sudden escape from his nurse and ran out through the open door into the yard, calling out at the top of his voice, 'Dis horsie got away wizout any harness on. Dis horsie got away,' etc. His nurse caught him, but she could not lead him back peacefully until she had put on him an imaginary harness.

"One day we sat down to dinner, and a platter with an unusually large fish upon it was placed before his father. L—— looked at it intently for a minute, then folded his hands, gave a little sigh, and said, 'Mr. Fis', we're about to eat you.'

"At night, after he had gone to bed, two or three times he called the bears to come and get him, as if he dared them to. Then he broke down and cried, fearing they might really take him at his word."

III.

"South of my home was a little slough, which was frozen in winter. I enjoyed walking up and down upon the ice imagining the ice was the pavements and the banks were the rows of houses in the streets of Boston. I had never been in Boston, nor in any other large city. I do not remember where I had heard of Boston, nor what I really knew about it. I was always alone when I played this.

"In the spring and summer I played in the orchard. I sat under the trees and imagined they were the homes of people who had the same names as the trees, and the same characteristics as the trees and apples. For instance, the snow apple-tree was a wide-spreading tree, with low branches, bearing apples with very red skins and very white pulp. Mrs. Snow was a short, stout woman, wearing a cotton dress and white apron; she had red cheeks, was always mild but jolly, not very quick-witted—a motherly woman. Her daughter, Emma, was a slight little girl, with very,

very white skin, red cheeks, blue eyes, and brown hair which curled. I can remember the appearance and characteristics of four other tree-women, but Emma Snow is the only child I ever named, although there were children in the other tree homes.

"This play was carried on for whole seasons, and, I believe, from year to year. My solitary play is that which I remember most vividly."

IV.

"Philip used to make believe that he was a bird and chirp. At times when playing this he would refuse to talk, saying that he was a bird and could not talk. He tried to peck up crumbs. He used to make believe that he was a cat and try to lap up milk or water as they do.

"He was very often an engine and when this was the case, he made the noises of the whistle and the bell. Then he was the whistle or the bell, and at the same time the whole engine. Sometimes he was a whole train, and at the same time the brakeman calling the names of the stations.

"My brother and I used to play that we were wild animals. Our cave was under the table, or sometimes we made a cave of chairs turned sideways. Often one of us would be a hunter and shoot a bear—one of the others. Then the bear would be carved and eaten, and immediately afterward return to life and become another bear. Sometimes we were lions and wolves.

"We used to go fishing often, the fishing-rod being a cane. As soon as the fish was landed, he would jump out of the boat and become another fish."

V.

"A little three-year-old girl once said to me, 'Now you be mamma, and I'll be papa, and I'll go to town while you stay at home and get dinner.'

"She then proceeded to hitch up a chair for a horse, and a very unruly one it proved to be, judging from her efforts to keep it under control. After some moments I made a remark to her, when she answered indignantly, 'Don't talk to me; don't you know that I am four or five miles away—almost up to Ottawa?'

"A certain little boy announced one day when about four or five years of age, 'Well, I want to be God, so I can say to things to *be* and they'll *be*.' One day he was found perched up on a slight elevation, from which he looked down on a little brother who waited for his commands, such as, 'Let the little boy run,' 'Let the little boy be still,' etc.

"The following took place among a company of blind children: They were found chasing around in great confusion, evidently trying to keep away from one grotesque little figure, who reached out after them and made a hissing sound. The teacher caught him and asked what they were playing. 'Oh!' said he, 'we are playing hell, and I'm the devil—don't you hear 'em sizz-z-z?'"

VI.

"I do not remember dramatizing any stories before I was old enough to read them for myself. Then we read stories for the sole purpose of playing them. We would never play if any one could see or hear us. We were rather afraid that some one would make fun of us.

"From the age of ten to fourteen we played constantly, whenever we could go to any part of the house where we would not have an audience.

"We often played the same thing over and over for three or four hours at a time, and every day at that.

"Our favorites were such books as *Swiss Family Robinson*, the *Elsie* books, and stories of girls who went to boarding-schools, and who got into all sorts of mischief. We two were apt to be five different characters in a single hour.

"In the evening, when we studied our school lessons, we were always girls (with high-sounding names), who were at boarding-school. I shall always remember the intense pleasure we derived from these plays. We often wondered if other children ever played in this way, and great was my surprise when I first heard it mentioned in this school that it was natural for all children to do so."

VII.

"Most of the stories told me were Bible stories, and I had a feeling that they were 'a thing apart' from everyday life. However, I never hesitated to play church and Sunday-school, and one time added the Lord's supper to my church service, being in turn minister and congregation. I played this only once; those in authority over me forbade a repetition.

"One feature of our 'church' play was a source of amusement to our mother, and the greatest delight to us. That was the music, or rather the hymns.

"Words and music were of our own composition, and the result, if not musical, was unique. We also 'created' the words themselves. They were weird enough, being, as nearly as I can recall them, something like this:

"'Geegobor'nē äshanēstō!
Āngemē'son nēshtebō!'

"I am sure we were as tender-hearted as children usually are, but our grief over the death of a baby chicken, a kitten, or a canary bird, was by no means inconsolable when we considered the possibilities there were in a funeral."

VIII.

"We used to dramatize Louisa Alcott's plays. The landing on the stairs was our stage. We often took plays in which there was a prince. We also used to play boarding-school. I did these last two when I was about fifteen years old."

IX.

"When I began going to school I played school at home, in season and out of season. Myself and playmates took turns in being teacher. The two things we enjoyed most were thrashing the pupils if we were the teacher, or speaking the pieces if we were the pupils. I have wanted to be a pedagogue ever since that time.

"One thing I used to do a great deal, when alone, was to take objects, such as thimbles and spools, play they were people, and then make them act parts. In this way I acted out many phases of the life going on around me. Some of these little dramas were love stories, and I remember how keenly I used to feel the parts I was having these objects act.

"For several mornings this last week I have noticed the children in the primary grades of the Institute in their free play in the gymnasium. They have made a boat out of the benches and other material, using the wands for oars. It really looked very much like a boat. Some of the children were passengers, others were the different officers of the crew."

X.

"One of our favorite games was convent. We usually played this on Sunday afternoon. In this game we were all nuns, and we would go into a dark closet and stay a long time praying. The floor, we said, was made of stone, and we must kneel there for twenty-four hours, until our sins had been forgiven.

"I think that the game I liked the best was dressing up in my mother's old clothes and playing that I was a peddler or gypsy woman. I was always very fond of dressing up in any kind of costume and imitating people."

XI.

"I delighted in fixing up a chair or a table to look like a piano, and in sitting and playing by the hour. I would hold my head as I had seen musicians do, and would try to move my fingers as they did. I think there really was music in my soul, as I played the part of the musician day after day."

Art

John Duncan Antoinette Hollister Clara Isabel Mitchell

PAINTING BY STUDENT OF SECOND GRADE

We print drawings from the various rooms of the school.

The First Grade is represented by two pictures of the Lake Bluff region, done on a recent excursion, and one of a scene from the story of the Sleeping Beauty. The Third and Fourth grades collected the wild flowers upon the same excursion, and made very excellent pictures of them afterward. Unfortunately these drawings suffer in reproduction by the loss of the color.

The Fifth Grade who enacted the story of Rip Van Winkle before the school, a short time ago, have made a series of pictures of the various incidents of the story. These pictures are at a large size, and are executed with colored crayons on a gray paper. The two accompanying drawings on page 882 give some suggestion of them.

The cut on page 883 represents Sir Bedivere's last look at Arthur as he sails away to Avalon. It is the work of a student in the Seventh Grade.

The girls of the High School, in connection with their work in Home Economics, are interesting themselves in ornamental needlework, and the beautiful design which serves as our frontispiece represents their efforts.

The scarf border in silk needlework, on page 883, is designed and executed by a member of the Pedagogic Class, and from

PAINTING BY STUDENT OF SECOND GRADE

the same class we give one or two sketches of the animals in Lincoln Park, and a drawing of Hercules wrestling with a sea monster.

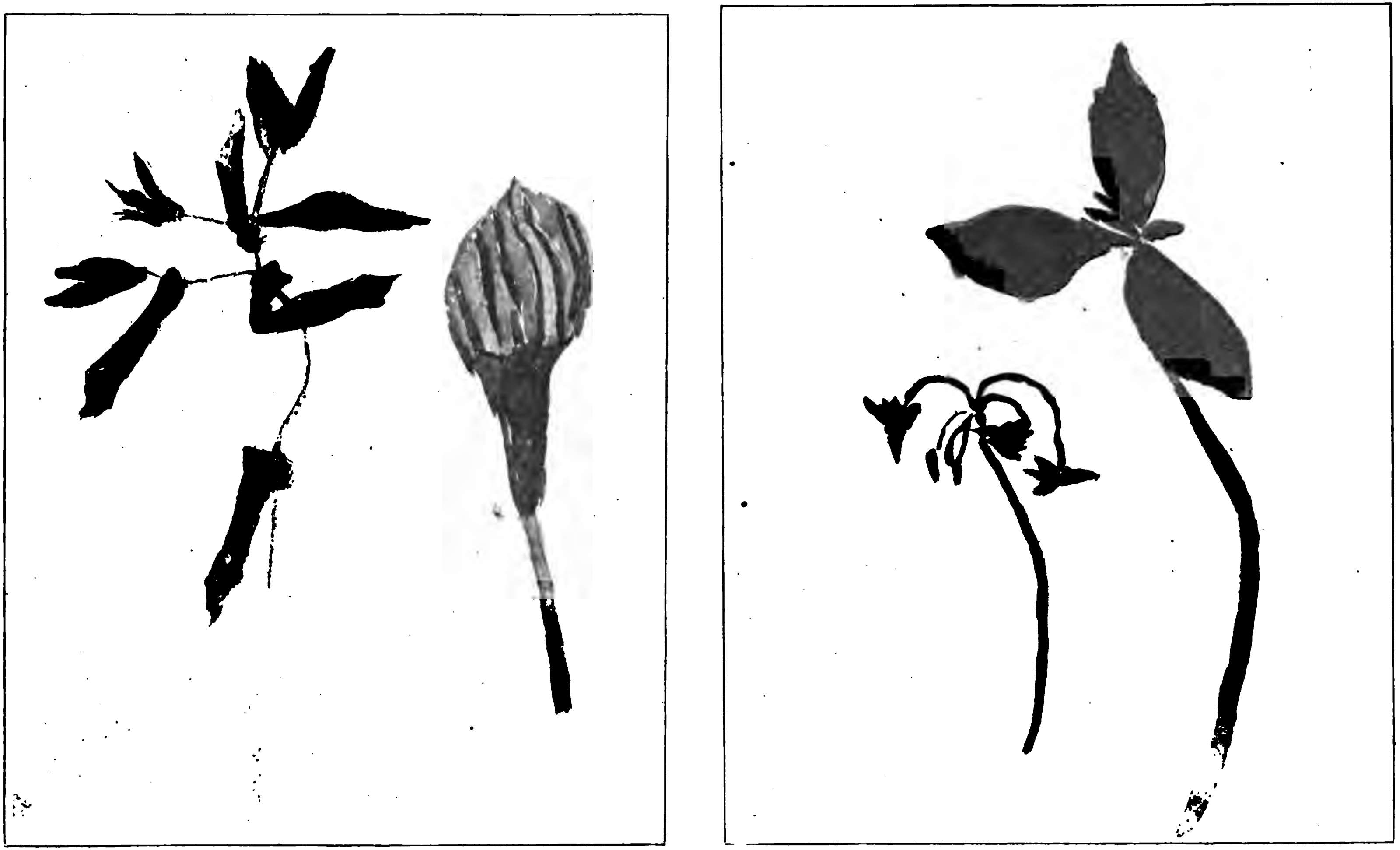
Pedagogic School: In our work illustrative of literature we shall pass on to Mediæval stories. The stereopticon will be called into service to steep the students in the ideals of Gothic and early Renaissance art from Byzantine times to Angelico and Botticelli. We shall try to analyze the particular characteristics of each artist as we go along, making a study of his methods and of his personality—his individual spiritual quality.

We shall deal especially with St. George and the legends of the saints. (For fuller outline see the July COURSE OF STUDY.)

References: Grant Allen, *Paris;* Spenser's *Faery Queen;* Mrs. Clement, *Handbook of Legendary and Mythological Art.*

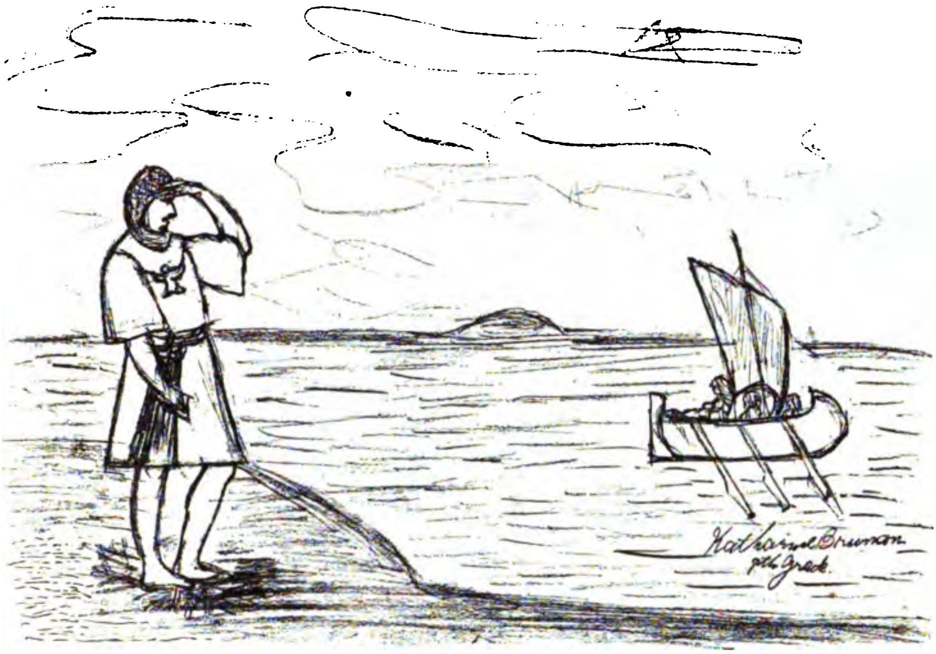
The sketching class will go forth to capture the busy life of the streets. It seems to us that this is the best way to direct and to hold the attention to the facts and the aspects of contemporary history, and to accumulate a store of vivid mental pictures to be worked over, arranged, and explained under the guidance of the historian and

PAINTING BY STUDENT OF SECOND GRADE



DRAWINGS BY STUDENTS OF THIRD AND FOURTH GRADES

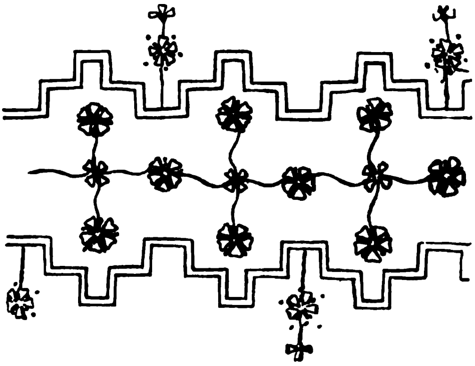
DRAWINGS IN COLORED CHALK BY STUDENTS OF FIFTH GRADE

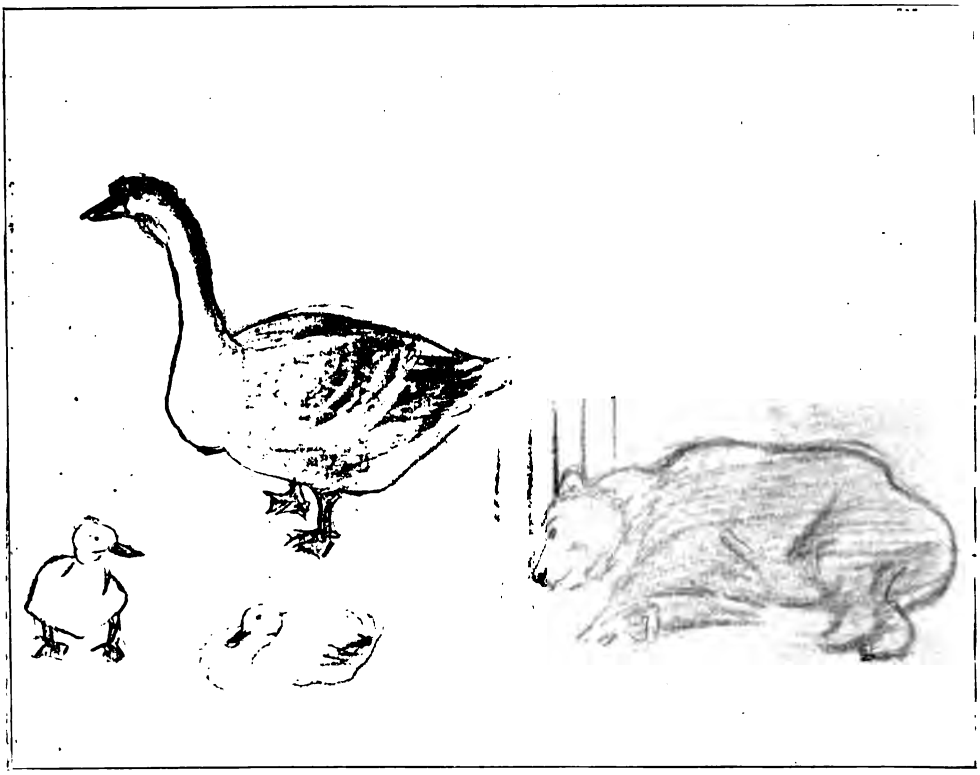


DRAWING BY STUDENT OF SEVENTH GRADE

sociologist. We shall thus be doing in a reasonable and educative way what the illustrated newspapers do in a haphazard and empirical way.

City conditions, traffic, transport, manufacture, building, agriculture, lumbering, mining. (For fuller outline see July number of the COURSE OF STUDY.)





DRAWING BY MEMBER OF PEDAGOGIC CLASS

Physical Training

Carl J. Kroh Caroline Crawford

Free Gymnastics (*continued*): (CARL J. KROH.) Third order. Procedures observed in the arrangement of lessons are based on the principles applied in preceding orders. The more or less formal routine, however, of a suggested order of exercises is modified by methods employed to enhance the pupil's interest in gymnastics. The teacher's interpretation of immediate or ultimate aims, or of the general or specific purposes of a lesson, prompts the method best calculated to enlist the pupil's interest throughout the development of the lesson. His function shall be to estimate and determine the physiological as well as the psychological order of the respective exercises and sequences with reference to their best effects. The pupil's power to do will constantly modify such orders. A judicious employment of mechanical laws in a gradient development of movement forms, insuring constant progress within proper limitations, implies a careful preparation of lessons of this order. The study of similar and dissimilar combined movement forms and their proper order and modes of execution with reference to direction in the different planes, etc., is important in a consideration of characteristically even results. Pupils should be led to recognize the teacher's "theme" or leading thought in a lesson, and to share the interest in its development.

Methods vary. A lesson or order may embrace a series of exercises devised according to certain rules insuring accuracy of execution (study of similar and dissimilar movement forms), or it may consist of an "addition" of supplementary movements to complete some preconceived activity; or, again, it may consist of an uninterrupted performance of exercises, a "chain of exercises," calculated to bring into use all parts of the body in successive order, and to be practiced rhythmically without pause, the commands for each exercise being given during the execution of the preceding exercise. Of the various methods, the order of "theme" work is the most interesting.

The selection of a "theme" is considered the first step in the preparation of a lesson under this order. Its final form, not infrequently, is determined only after a careful study of the requirements of a lesson embodying the kind and form of movements and exercises suggested. The work consists of exercises and the various forms of combinations of exercises stated in the "theme." Beginning with the simpler exercises of the arms, legs, and trunk in the fundamental or characteristic standing position it gradually leads to the complex forms of a lesson, a combination of the activities suggested. Thus, also, various forms of activity may be considered in the choice of the "theme," as suggested for instance in the attitudes of the "Discobolus," the "Gladiators," the swimmer, the wood-chopper, the mower, etc.,—the complete activity being first resolved into its parts, as it were, in the fundamental or required standing positions, and finally combined as a whole with its accompanying changes of positions. In the work of this part of the lesson each position is taken at command as described, whereupon its repetition from two to six times follows in rhythmic order.

The "theme" or lesson proper, so-called, is preceded by an introductory drill designated as "corrective" or "preparatory."* This part of a lesson consists of movements taken from the lesson proper, and supplemented at need by movements not found in the "theme." These movements are in the main executed at command only, and are not to be executed as rhythmic exercises. They follow in the order of head, shoulder, arm, trunk, and leg exercises, and are to be executed with the greatest accuracy.

Lesson Order: Order, tactic, exercises.

Corrective or preparatory drill—elementary order as a basis. (Movements taken from the "theme"—lesson proper—needed movements inserted.) Movements commanded.

Theme. Exercises executed in rhythm.

Supplementary exercises. Tactics, etc.

Breathing exercises.

The regular gymnastics of the High School and Grammar Grades were discontinued at the end of last month. An illustration of the regular order of work, consisting of free exercises, light gymnastics, apparatus work, and games was given during one of the morning periods usually devoted to general exercises.

The physical tests and measurements, to be taken during the week preceding the close of the school year, will be the subject of a future report.

Field excursions and general outdoor recreation on the lakeshore and on the fields of Lincoln Park will be the order during the remaining weeks of the school year.

Individual Gymnastics

CAROLINE CRAWFORD

The following outlines, given for physical measurements, examination, and diagnosis, are tentative in character. At present they form the basis of the work relating to causes which may affect the child's growth and development. The present emphasis is toward the relation between nutrition and condition. It is evident that much study is needed to gain a better knowledge of the effect of different forms of nutriment upon the child; also, under what nutritional disadvantages, due to physical history, inheritance, and disease, the individual is placed.

PHYSICAL MEASUREMENTS.

Name..
Born..
Nationality.......................................
Father......................Mother......................
His " ....Her " ....
" Mother................ " Father....................
Occupation (Father)...............................
Resemble..
Rate of growth previous...........................
Parents' Report (See Book —, pp. —).
Physician's Report (See Book —, pp. —).
Remarks...
....
....

PHYSICAL MEASUREMENTS.

AGE............ DATE....................
AGE............ DATE....................

Weight	..	..	..	Girth, forearm, R	..	..	..
Height, standing	..	..	..	" " L	..	..	..
" sitting	..	..	..	" wrist, R	..	..	..
" knee	..	..	..	" " L	..	..	..
" pelvis	..	..	..	Depth, chest	..	..	.
" sternum	..	..	..	" waist	..	..	..
Girth, head	..	..	..	" head	..	..	..
" neck	..	..	..	Breadth, head	..	..	..
" chest	..	..	..	" neck	..	.	..
" " full	..	..	..	" shoulders	..	..	..
" ninth rib	..	..	..	" waist	..	..	..
" " " full	..	..	.	" hips	..	..	..
" waist	..	..	.	Length, shoulder-elbow, R	..	..	..
" hips	..	..	..	Length, shoulder-elbow, L	..	..	..
" thigh, R	..	..	..	Length, elbow-tip, R.	..	..	.
" " L	..	..	..	" " " L.		..	..
" knee, R	..	.	..	" foot, R	..	..	.
" " L	..	..	..	" " L	..	..	..
" calf, R	..	..	.				
" " L	..	..	.				
" ankle, R	.	..					
" " L	..	..	..				
" instep, R	..	..	..	Cap. lungs	..	..	..
" " L	..	..	..	Strength, forearm, R.	..	..	..
" upper arm, R.	..	..	..	" " L.	..	..	.
" " " L.	..	..	..	" chest	..	..	..
" elbow, R	..	..	..	" back	..	..	..
" " L	..	..	..	" legs	..	..	..

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*Corrective movements are chosen to secure proper poise of the body toward an easy and graceful carriage. The term "preparatory drill" is used in the sense that the respective movements gradually prepare the pupils for the more difficult work of the lessons. The correct execution of all movements occurring in a lesson is an aim of this part of the lesson.

PHYSICAL EXAMINATION.

NAME ....

AGE .... DATE ....

....

....

Head	Forward, back, right, left.
Neck	Large, small, right, left.
Shoulders	Forward, down, right, left.
Scapulæ	Prominent, high, down, right, left.
Arms	Triceps, biceps; extensors, flexors.
Hands	Right, left.
Chest	Flat, prominent, hollow, center, right, left.
Sternum	Short, long, depressed.
Ribs	Prominent, depressed, center, right, left.
Abdomen	Prominent, depressed.
Waist	Narrow, flat, deep.
Back	Straight, round, hollow.
Spine	Prominent, curved, right, left, anterior, rotation, cervical, dorsal, lumbar.
Hips	Broad, narrow, down, high, right, left.
Thighs	Flexors, extensors.
Leg	Flexors, extensors, bow, knock-knees.
Instep	High, low.
Feet	Flat, right, left.

PHYSICAL DIAGNOSIS.

NAME ....

AGE .... DATE ....

....

....

- Head.
  - Eyes, right .... Left ....
  - Ears, right .... Left ....
  - Mouth ....
  - Throat ....
- Thorax.
  - Heart ....
  - Lungs ....
- Abdomen.
  - Stomach ....
  - Liver ....
  - Intestines ....
  - Kidneys ....
- Pelvis.
- Standing.
  - Head ....
  - Chest ....
  - Hips ....
  - Poise ....
- Food, amount.
  - Proteid ....
  - Fat ....
  - Carbo-hydrate ....
  - Water ....
- Blood.
  - Corpuscles ....
  - Hæmoglobin ....
- Urine.
  - Quantity ....
  - Quality ....
- Skin.
  - Condition ....
  - Color ....
  - Texture ....
  - Eruptions ....
- Muscles.
  - Condition ....
  - Character ....
- Fat.
  - Quantity ....
  - Character ....
  - Fatty degeneration ....
- Diseases.
  - Nervous ....
    - Postures ....
    - Action ....
    - Expression ....
  - Chronic ....
    ....
  - Contagious ....
    ....

Organization of a Library

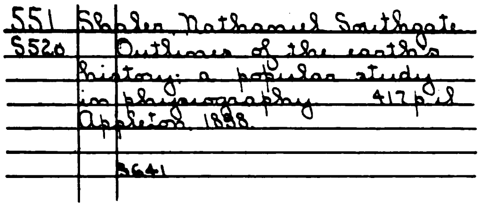
Irene Warren Frances Simpson

The general principles of cataloguing and the various kinds of catalogues in use at the present time in typical libraries were defined in the May number of the COURSE OF STUDY. The purpose of this paper will be, therefore, to give in brief and simple form the actual method of making a card-catalogue.

Materials: The guides, inks, pens, and penholders desirable for making library records have already been discussed in a former outline. (See COURSE OF STUDY, January, 1901, p. 427.) If the cards in the catalogue are written, great effort must be made to secure legibility, and to that end all shading and unnecessary strokes should be omitted. A plain, vertical writing will make a neat and legible catalogue. If a typewriter is used, one with a card attachment is best, as ordinary correspondence rollers do not hold heavy cards with sufficient firmness. A black record ribbon should be used which should be changed whenever the entries show the slightest signs of becoming faint. Stiff white cards suitable for cataloguing purposes can be obtained at various prices from office supply firms.

Entries: In general, each book in the library is entered twice in the catalogue; under the author's surname, called the main or author entry, and under a subject, called the subject entry.

Methods of Making Entries: Enter all books under the surname of the author, followed by the forenames in full. The author entry is written on the top line, beginning at the first marginal line. On the line below the end of the author entry, beginning at the second marginal line, is written the title of the book exactly as it appears on the title-page, except that the article in English is usually omitted and capitals are used only for the first word and proper names and their derivatives. In the case of a long title, omissions, indicated by three dots (. . .) may be made. Following the title and separated from it by 1 cm. (⅜ in.) is written the imprint consisting of the edition, paging, or number of volumes, illustrations, portraits and maps, place of publication or publisher, and date, with the name of the series to which the book belongs, if desired. The accession number is written in the lower left-hand corner in black ink and the call number in the upper left-hand corner in red ink. The word which most accurately describes the subject-matter of the book is written as a subject heading on the reverse of the card in red ink and on the first line of the subject card also in red ink. The library should keep a list of such subject headings as are used, and should add to their number as fast as new ones are needed, taking care never to employ synonyms, but making a reference from each synonym to the heading actually used.

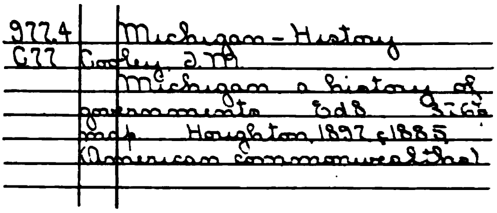


551 Shaler, Nathaniel Southgate
552a Outlines of the earth's
history: a popular study
in physiography 417 p. il
Appleton. 1898.

5641

Facsimile of Author Card
Actual size 7½x12½ cm.

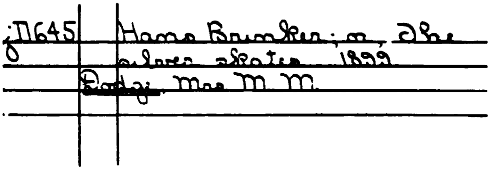
Subject Entry: The subject card is an exact copy of the main author card, except that initials may take the place of the author's forenames. The subject heading is written on the top line in red ink, beginning at the inner marginal line. The accession number is always omitted.



977.4 Michigan - History
C77 Cooley, T.M.
Michigan a history of
governments. Ed. 3 rev.
and enl. Houghton, 1897 c1885.
(American commonwealths.)

Facsimile of Subject Card
Actual size 7½x12½ cm.

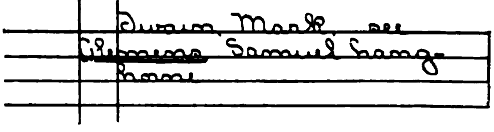
Title Entry: All works of fiction, plays, single poems published separately, and books with striking titles should be entered also under their titles. A short form of the title is used, written on the first line, beginning at the inner margin and followed by the date of publication. The author's surname, with initials, is written at the outer marginal line, and the call number in the upper left-hand corner.



jD645 Hans Brinker; or, The
D silver skates 1899
Dodge, Mrs. M. M.

Facsimile of Title Card
Actual size 7½x12½ cm.

Reference Cards: The cataloguer should refer freely from pseudonyms to real names, from other forms of spelling to the one adopted, and in general should leave no device untried which may help to an intelligent use of the catalogue.



Twain, Mark, see
Clemens, Samuel Lang-
horne

Facsimile of Reference Card
Actual size 7½x12½ cm.

Arrangement: The arrangement of the cards in the catalogue drawers should be strictly alphabetical, and the case should be provided with a rod in order to make the cards entirely secure. Manila guides (see the COURSE OF STUDY, January, 1901, p. 427) should be inserted to facilitate the use of the catalogue, and each drawer should be labeled.

An inexperienced cataloguer can often be greatly assisted by consulting the printed catalogues of other libraries, and noting the form of entry adopted. The Cleveland Public Library has issued a dictionary catalogue in a bound volume which is for sale. The Milwaukee Public Library also sells its catalogue. The Bureau of Education will send free on application the catalogue of "A. L. A." Library, 5,000 volumes for a popular library shown at the World's Columbian Exposition. This is in pamphlet form, and should by all means be secured, as it will be found most useful.

References: See COURSE OF STUDY for May, 1901; also Dewey, *Library School Rules and Simplified Library School Rules;* and A. L. A., *List of Subject Headings.*

Literature for the Primary Grades

Gudrun Thorne-Thomsen

Pedagogic Class: As stated in the May number of the COURSE OF STUDY, stories, presenting different types, are given this month.

The Pancake

Once on a time there was a woman who had seven hungry children, and there was an old man in the house, too. One day the goody was frying a pancake for them, and the children stood round about, and the goodman sat by and looked on.

"Oh, give me a bit of pancake, mother, dear; I am so hungry," said one child.

"Oh, darling mother," said the second.

"Oh, darling, good mother," said the third.

"Oh, darling, good, nice mother," said the fourth.

"Oh, darling, pretty, good, nice mother," said the fifth.

"Oh, darling, pretty, good, nice, sweet, mother," said the sixth.

"Oh, darling, pretty, good, nice, sweet, clever mother," said the seventh.

So they begged for the pancake all around, for they were so hungry and so good.

"Yes, yes, children; only wait a bit till it turns itself." She ought to have said, "till I can get it turned," for when the pancake heard this, it turned itself all of itself, jumped out of the pan, sprang out on the floor, and rolled off like a wheel through the door and down the hill.

"Halloa! Stop, pancake!" and away ran the good woman after it, with the frying-pan in one hand and the ladle in the other, as fast as she could, and her children behind her, while the old man limped after them, last of all.

"Hi! won't you stop? Seize it. Stop, pancake," they all screamed out, one after the other, and tried to catch it; but the pancake rolled on and on, and in a twinkling of an eye it was so far ahead that they could not see it.

So when it had rolled a while it met a man.

"Good day, dear pancake," said the man; "don't roll so fast. Stop a little and let me eat you."

"Oh, no, if I have run away from the good woman, the old man, and seven hungry children, I may well run away from you, Manny Panny," said the pancake, and rolled on and on till it met a hen.

"Good day, pancake," said the hen.

"The same to you Henny Penny," said the pancake.

"Pancake, dear, don't roll so fast; wait a bit and let me eat you up," said the hen.

"Oh, no, if I have run away from the good woman, the old man, and seven hungry children, and Manny Panny, I may well run away from you, Henny Penny," said the pancake, and so it rolled on and on like a wheel down the road.

Just then it met a cock.

"Pancake, dear, don't roll so fast, but wait a bit and let me eat you up," said the cock.

"Oh, no, if I have run away from the good woman, the old man, and seven hungry children, and Manny Panny, and Henny Penny, I may well run away from you, Cocky Locky," said the pancake, and off it set rolling away as fast as it could; and then it met a duck.

"Pancake, dear, don't roll so fast, wait a bit and let me eat you up," said the duck.

"Oh, no, if I have run away from the good woman, the old man, and seven hungry children, and Manny Panny, and Henny Penny, and Cocky Locky, I may well run away from you Ducky Lucky," said the pancake, and with that it took to rolling and rolling faster than ever.

So when it had rolled a long, long time it came to a brook, and the poor pancake could not get over.

Just then it met a pig.

"Good day, pancake," said the pig.

"Good day, Piggy Wiggy," said the pancake.

"If you would like to get over the brook, just seat yourself on my snout," said the pig, "and I'll carry you over."

So the pancake did that.

"Ouf, ouf," said the pig, and swallowed the pancake at one gulp; and then, as the poor pancake could go no farther, why—this story can go no farther either.

The preceding story is a type illustrating the simplest fairy-stories, and follows the nursery rhymes in the order of significance. In the same class belong: *Chicken Licken Who Thought the Sky had Fallen Down; The Death of Chanticleer; The Greedy Cat; The Sheep and the Pig Who Set up House.*

One step in advance of these, with more plot and of more significance, the following may perhaps serve as an example:

The Three Billy-Goats Gruff

Once on a time there were three billy-goats who were to go up to the hillside to make themselves fat, and the name of all these three was "Gruff."

On the way up was a bridge over a brook they had to cross, and under the bridge lived a great ugly Troll, with eyes as big as saucers, and a nose as long as a poker.

So first of all came the youngest billy-goat Gruff to cross the bridge.

"Trip, trap; trip, trap!" went the bridge.

"WHO'S THAT TRIPPING OVER MY BRIDGE?" roared the Troll.

"Oh! it is only I, the tiniest billy-goat; and I'm going up to the hillside to make myself fat," said the billy-goat, with such a small voice.

"NOW I'M COMING TO EAT YOU UP," said the Troll.

"Oh, no! pray don't take me. I'm too little, that I am," said the billy-goat; "wait a bit till the second billy-goat Gruff comes, he's much bigger."

"WELL! BE OFF WITH YOU," said the Troll.

A little while after came the second billy-goat Gruff to cross the bridge.

"Trip, trap! Trip, trap! Trip, trap!" went the bridge.

"WHO'S THAT TRIPPING OVER MY BRIDGE?" roared the Troll.

"Oh! it's the second billy-goat Gruff, and I'm going up the hillside to make myself fat," said the billy-goat, who had not such a small voice.

"Now I'm coming to eat you up," said the Troll.

"Oh, no! don't take me; wait a little till the big billy-goat Gruff comes; he is much bigger."

"Very well! be off with you," said the Troll.

But just then up came the big billy-goat Gruff.

"Trip, trap! Trip, trap! Trip, trap!" went the bridge, for the billy-goat was so heavy that the bridge creaked and groaned under him.

"Who's that tramping over my bridge?" roared the Troll.

"It's I! the billy-goat Gruff," said the billy-goat, who had a big loud voice of his own.

"Now I'm coming to eat you up," roared the Troll.

"Well, come along! We will see about that." That was what the billy-goat said; and so he flew at the Troll, and tossed him out into the brook, and after that he went up to the hillside; and so

"Snip, snap, snout,
This tale's told out."

There are a few misconceptions abroad as to the use of the story in the education of children. First, that the story, more than anything else, cultivates the imagination. The study of science, geography, history, or mathematics is just as much a reconstruction of new images as is the imaging of a most fanciful story.

Imagination is simply one of the mental processes by which all knowledge is gained, and is, therefore, only a means to an end.

A second fallacy is that the story may be applied like a plaster or medicine for moral weaknesses. Often teachers and mothers ask: What stories shall I tell to my boy, who is not always truthful? or who is selfish, etc. Nothing but work which calls forth truthfulness, and conditions which give opportunity for unselfishness, can help such a child. The story may inspire and awaken noble impulses, but will become worse than useless unless the child finds all around him chances to act on these impulses.

There must be no gap between storyland and the actual world in which the child lives; when the emotions are aroused, such as courage, kindliness, pity, self-sacrifice, the child must find something to act upon, something in his daily work that requires these qualities.

An apparent enmity exists between science-teaching and story-telling. The child's relation to nature around him is an intimate, personal one. Hills, forests, streams, and flowers become his friends, and inspire him with love and confidence.

As the child grows older, and his scientific knowledge of the world increases, this feeling of friendship toward nature is intensified. He begins to see the relation of nature to all life, and to understand some of the immutable laws underlying the whole universe; from an entirely subjective point of view, the child by the help of science is able objectively to regard nature without and nature within self. There is no break between the mythical stage and the science stage, only an evolution of ideas; the true story spirit toward nature is never lost, but runs into a wider channel, giving color and emotion to scientific realities. To use Stanley Hall's illustration of the tadpole's tail: "Since the tadpole loses its tail, anyway, we might reason that it is not needed, and might just as well be cut off; but then it would be rather hard on the tadpole." In the same way, if stories are taken out of child-life, it will be crippled and deprived of that which is necessary for subsequent healthy growth. It is to be hoped that side by side with science-teaching the myth will maintain its place, not as an antagonist, but by its spirit a faithful companion, supplementing and enriching the other.

It is a fallacy to believe that science needs to borrow the fanciful dress of the myth; it can well stand alone and hold its own. This sugar-coating of scientific facts so common in our day, shows the inability to understand child-nature. Three-fourths of the so-called science reading for primary pupils consists of such material as the following:

"Some tired little raindrops were resting in the grass.

"'Come with me and have a dance,' said the bright, sweet sunbeam. 'But you must put on your white dresses first,' and she kissed each one on the cheek.

"Then suddenly they felt themselves so light, and danced merrily high up in the air. But what should happen? Mr. Northwind was out for a frolic, too, and when he met the little vapors, which we now must call them, they grew so cold that they had to put on warm winter clothes," etc.

Such reading matter a healthy child naturally resents, and however well intended, it appears just as silly and affected to him as it should to us.

Of late, efforts have been made to select appropriate myths to correlate with science work. In this attempt the teacher has often yielded to the temptation of reading into the myth scientific truths that are hardly suggested by the original, or to so adapt it as to emphasize and reinforce scientific statements.

It must always be kept in mind that the myth is a very partial scientific truth, and cannot, therefore, give expression to the modern knowledge of science.

Mention may be made here of the modern made-up fairy-stories. It is not easy for us grown-up people to become like children again, or to put ourselves into the child stage of the race, so as to produce real fairy-stories. So we find in such stories a tendency to preach, an over-accentuated moral teaching, and the conscious analysis and philosophy of the adult, merely disguised in fairy-story clothes.

As to interpretation of the story, it goes without saying that the children should not be asked or forced in any way to interpret the deeper meanings of the story, so as to become conscious of its teachings.

Summary of the Technique of the Work in the Primary Grades

Flora J. Cooke

Certain subjects of study have appeared each month in the outlines of the COURSE OF STUDY. These were selected because they promised direct points of contact and interest for the children of a particular grade at a particular time. They were selected, also, because of the known experiences of these children—for the amount of educative work and individual effort which they required — and for the possibilities which they contained of exerting a wholesome influence upon the class. As the teacher's preparation, however, was made a month before the time for actual teaching, there were always many changes necessary, for in each case the immediate demands of the children governed the work given, and not the COURSE OF STUDY. The chief value of this method of planning is that it adds to the experiences of the teacher, and shows her her own faults in judgment, which she is bound to investigate as she compares the prophecy with the actual work done.

The grade outlines have only emphasized the reasons for choice in the work, and suggested the possible material or apparatus necessary to its performance. The training or formal side of the work has not appeared prominently in the monthly plans. It seemed feasible, therefore, to sum up the year's work from the standpoint of technique in the June issue of the COURSE OF STUDY.

I. **Number:** The children in the primary grades have had no number for the sake of the number alone, but they have been constantly planning, making, comparing and judging, estimating and verifying, so that the number work has come into daily use. The work has been so planned that each month has presented new difficulties, new facts, or a new process, and care has been taken ***at the time when that fact or process was a necessity*** to have it understood and made ready for automatic use..

The June work will include a series of tests in the form of games to see what the children have gained (incidentally, as far as they were concerned) of the so-called facts and processes of arithmetic through their actual use in the necessary imaging required by their work.

II. **Reading:** Reading has been used as a means to an end, not an end in itself. It has been a direct help in bringing the children into contact with good things in nature, literature, and with simple history pertaining to or explaining phases of their social life.

1. The reading lessons, selected from supplementary reading books or prepared by the teachers, might be classified under one of the following heads: (a) Reading lessons which place before the children for their consideration their various experiences and observations in a subject—the chief requisite of such lessons being that *something new* come to the children as the result of the review. (b) Lessons which give data or useful information. (c) Lessons which present a simple, concise plan of work. (d) Good and beautiful descriptions of something within their own experiences or power of comprehension. (e) Educative stories.

2. Vocabulary. New words have been

functioned through their use. That is, a word was presented to a child only when it was necessary to him for his expression.

As a material or object was used, and the child discovered what it was, its name was written upon the blackboard, that, at the time of greatest interest he might associate the written form with the thing it symbolized. This method of word-learning means economy of effort, and diminishes the necessity for drill. The words gained in this way, and words constantly used which had no intrinsic meaning, such as conjunctions, prepositions, etc., were placed by the children in dictionaries which they made, so that they might find and spell the words correctly when they needed to use them independently. The words thus functioned and placed in dictionaries during the first year would probably average for normal children about three hundred, and they do not differ to any great extent from the words in the ordinary First Reader.

Through this training, the children in the Third and Fourth grades are able to use small pronouncing dictionaries.

III. Writing: There has been no writing without a distinct purpose, and but little drill. The children have constantly written records, recipes, plans of work, letters, and stories. As many children in the primary grades had already acquired bad habits in the cramping of the hand, and in position of body, they have done much writing upon the blackboard and upon large paper fastened to the tops of desks, which they are able to raise to any angle desired. The demand has been to make the writing as free, rapid, and legible as possible.

IV. Spelling: The effort has been to establish *habits* of correct spelling—every dictionary lesson and every written lesson has been also a spelling lesson. Oral spelling has been used only when some special occasion demanded it.

V. Language: Every good lesson in any subject has been also a lesson in language. The motive has been to have the children form habits of clear and correct expression of thought. The standard placed before the child has been that of making himself understood in the best and most economical way. Beauty in expression and individuality in style have been encouraged in every way possible, and the ideal has been held of accepting only the best expression of which the pupil is capable.

Rule for Teachers (Colonel F. W. Parker): "Whenever a rule of syntax, a grammatical term, definition, inflexion, conjugation, or punctuation mark can be of immediate assistance to a pupil, it should be given, explained, and used until its use becomes automatic."

Suggestion (Colonel F. W. Parker): "Habitual mistakes of children which have been acquired through imitation can be corrected only by the continual use of the correct form."

Notes on a Trip to Highwood

Harriet T. B. Atwood   Bertha Payne   Alice G. Kirk

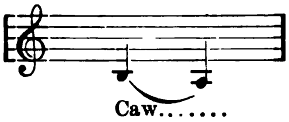
The whole school recently took a trip to Highwood. Before going, the First and Second grades talked over the things they might see on the journey. They made little books, heading each page with the printed names of things they were apt to find there.

As some of the Second Grade could not go, members of the class talked over what might be done to give to these children a good picture of Highwood. A building-up in miniature of this region was decided upon. Two children were chosen to draw a background on large sheets of gray paper with colored crayons. In the foreground, on a sand table, the children are using all the material brought back with them, such as stones, soil, plants, etc., to help build up the best possible representation of the region visited. The books in which their notes were recorded, together with the above work, developed the following descriptions, which were written at home. They have had no correction except the misspelled words which are italicized.

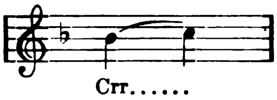
The study of birds has been continued in Lincoln Park and the Academy of Science, where we have recognized the same birds seen at Highwood. In the park we have imitated the bird notes, and the children have suggested words which they imagined the birds had in their songs. This roughly represents the notes as the children heard them. Their imitation is much more accurate than any that can be given on the staff.

Bird Notes

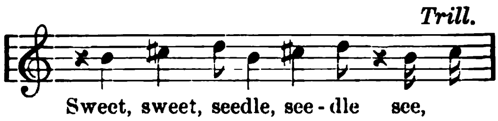
The crow sat upon a tree near us, saying:



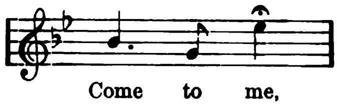
We heard the blue-jay at Highwood. He seemed to say:



The yellow-breasted warbler flew from branch to branch, singing:



We heard the wood-thrush in Lincoln Park calling:



Papers Written by the Children

I.

Dow Harvey

(Seven years old—First year in school)

We took the train to Highwood.

Then we went to the ravine.

It has tall hills on each side.

There is clay and leaves in the ravine.

It is in the woods.

There are flowers on each side.

We followed the ravine to the lake.

We jumped across the stream and over logs and branches.

After we got in sight of the lake we saw tall clay cliffs with the ravine running between them and a nice sand beach.

The cliffs are tall, high, clay things, and they are cracked all over.

There is a place where the clay comes over the sand.

When we wanted to get upon the top of the cliff we had to climb through a gully to get to the top.

We tried to throw stones down without having them touch either side.

II.

Margarita Binder

(Eight years old—Second year in school)

First we took the train at the Northwestern depot.

We hardly rode a little way when we saw some flowers, but we could not stop to pick them because we were in a great hurry.

We passed some trees, but we could not see what kind they were, as the train was going so fast.

We passed lots of other things.

Pretty soon we came to Highwood, and there we left the train.

Then we walked a little way, when we saw some violets and other flowers, but Mrs. Atwood told us not to pick them, as they would wilt before we got home.

Then we came into the woods, where we saw some lovely flowers, and afterward we walked to the ravine.

We found dried leaves and clay there.

There was a hill on either side. Then we sat under a tree and ate our lunch. In the ravine and on the hill were fine trees and lovely blooming bushes, and Mrs. Atwood told us to find the mouth of the ravine.

We went over hills and fallen-down trees until we got to the mouth of the ravine, where it was sandy, and we found it turned into a lake. Here we drew some pictures with colored chalk.

III.

Gladys Gansberger

(Second year in school)

We picked up some buttercups when we went to Highwood.

We went up a hill and then we came down and we saw a ravine right down *below* us.

And there was some grass there and Miss Hollister sat down on the grass. We *laid* down our lunch-boxes and then we went up another hill.

After a little we ate our lunches and Margarita and I were above the hill and the sunflowers *were* right in back of us.

There was a bush right in front of us and it had yellow blossoms on and we saw some violets all in a pack and the ravine was very muddy.

We enjoyed the trip.

I thought that the violets and white trilliums were the prettiest flowers I saw at Highwood.

I saw sunflowers, too.

IV.

May Peabody

(Ten years old—First year in school)

Fourteenth of May we took the train to Highwood.

At Highwood we walked along a road until we came to a big bridge and then we went down a little path and there was a stream.

On each side was clay and flowers. Big slopes rose up on each side of the stream. On the slopes were beautiful flowers.

Trees bent so far over that they looked like they were going to break right in two.

Margaret and I walked up the slopes and there we found a big patch of violets: they were so beautiful.

Miss Hollister, Mrs. Atwood and some of the Second Grade and some of the First Grade stopped below. Margaret, May Hune, and I went up the slope and there we ate our luncheon at the foot of a big oak tree.

In front of the oak there was a big cluster of bushes. We all ran into them and they were just full of wake-robins. We gathered a *handful* of them and then we went down to Mrs. Atwood and showed her the wake-robins and then all our flowers we put in our lunch-boxes.

All the pretty spring flowers were in blossom.

They were so beautiful.

Reading Lessons for the Primary Grades

Literature Series No. 12

Flora J. Cooke

Birds

The Mole and the Lark

(Adapted from Hans Andersen)

It was autumn. The leaves were falling and the cold winds had begun to blow. Many birds had gone South, but one little lark had broken her wing and could not go. Her nest had blown away, so she had no home. It began to snow, and the poor little lark was frightened indeed. After a while she saw an opening in the ground and hopped into it.

She found herself in a long, dark hall, but she hopped on and on, dragging her broken wing.

At last a strange voice stopped her. "Who comes here? What do you wish?" it said. It was so dark that the poor lark could not see who spoke to her. When the glow-worms came with lights she trembled with fear, for she saw an old mole and all of his family. But she bravely told her sad story, and begged to stay a while in the mole's home.

"You may stay," said the mole, "and since birds sing, you may sing to us for your living."

Though they did not understand the ways of the lark at all, the mole household were very kind to her and she stayed all winter with them.

All the songs that she knew were about the trees or the sunshine.

The mole did not like these songs. "Those songs are foolish,' he said. "The sun is not beautiful Its light hurts my eyes."

"Then what shall I sing about?" said the poor lark.

"Sing about my soft fur," said the mole, "or sing about our fine store of food."

The little lark felt sad; but she wanted to please the mole. She knew that he could not see the sun, and she felt very sorry for him.

All winter long she made new songs. She sang of the mole's home and his fur and his children. The mole understood these songs and liked them.

"You must never leave us," said he.

"You are very kind," sang the lark. "I thank you with all my heart."

But she longed all the time for the bright sun. Her wing was now well again, but she did not think of leaving the mole.

One day she saw a beam of light at the end of the hall. She hopped toward it faster and faster and soon she was out in bright sunlight again.

The snow had gone. The grass was green, and the flowers were blooming. The lark forgot the darkness and the mole. She flew high in the sky, and sang with great joy. Many friends heard her voice and followed her.

"She sings better than ever," they said. "Her voice is sweeter. "Tell us where you have been all winter, friend Lark?"

The lark sang to them all her songs of the mole, of his food and his fur and his children. But the larks did not understand these songs.

"Don't sing of darkness and stupid old moles," they said. "Sing that song of the sunshine. That was beautiful."

And the little lark did sing it. She sang it better than any one else.

The Birds of Killingworth

(Adapted from Longfellow's Poem)

It was spring in the little town of Killingworth. The grass was green and many flowers were in bloom. The trees had new leaves and the spring birds were singing in the trees.

Flocks of crows were settling near the corn-field. "Last year the crows ate much corn," said the farmers. "The other birds ate the fruit and grain. We will not bear it. We will protect our crop," they said. So they called a great meeting.

They decided that all birds should die. One thoughtful man tried to save them, but the farmers said: "Why should we listen to him? The birds are our enemies. They must die!"

So all the old birds were killed, and the little ones starved in their nests.

Then summer-time came. The air was still and hot. No birds sang sweet songs. The farmers had forgotten one thing. A great many insects soon came. They ate all the leaves and flowers, so that no grain or fruit grew.

It was a sad, sad summer.

Oh, how the people wished for the birds! They longed for their sweet songs. They were quite willing to give them their share of food.

The next spring a great wagon came into Killingworth. It was covered with green branches and vines. Among the branches were many cages full of birds.

The children shouted with joy when they saw them. They opened the cage doors and set the birds free. They flew singing to the trees and built new nests.

That was a happy summer in Killingworth.

Buds

Science Series No. 7

Flora J. Cooke

(NOTE: Record of a first-grade class of children in May, 1894, upon the opening of buds on trees in the park surrounding the Normal School. Children will compare this with their records for this year.)

We began looking at the buds on the trees in March.

We did not find any open buds then.

All the buds were small and black.

One day we found little green points in the end buds on the willow tree.

After a while we found green points in the ash-leaf-maple buds.

In April we found green points in the buds on all the trees.

Then the buds began to open.

The ash-leaf-maple buds opened first.

Just the buds on the ends of the twigs opened.

Now the willow tree has more open buds than any other tree.

All the open buds are on the sides.

The end buds on the willow tree are not alive now.

They were alive in March, but they were very small and thinly covered.

We think a frost must have killed them.

The oak buds had the thickest coats.

Nearly all the trees have leaves now.

Flowers came on our crab-apple tree before the leaves came.

Catkins came on our cotton-wood tree before the leaves came.

We think the oak-tree leaves are the prettiest.

They are a soft light green or red.

The buds on the oak tree opened the first week in May.

Trees

The trees need water.
The trees need soil.
The trees need heat.
The trees need light.

The trees give beauty and shade.
They give fruit.
They give wood.

Questions

Do the trees give most or take most?
Do the trees ever give heat or light or soil or water?

A Tree Rhyme

"If all the trees were one tree,
What a great tree that would be!
And if all the seas were one sea,
What a great sea that would be!
If all the axes were one ax,
What a great ax that would be!
And if all the men were one man,
What a great man he would be!
And if the great man
Should take his great ax,
And cut down the great tree,
And it should fall into the great sea,
What a splish splash there would be!"

The Water System of Chicago

(ADAPTED FOR THIRD GRADE)

Geography Series No. 2

Gertrude Van Hoesen

It was the year 1863, and the city of Chicago was growing larger and larger. Before this time the people had obtained their water from the Chicago River, and from that part of the lake near the shore. Now the sewers emptied into the river and the river emptied into the lake. This made the water very impure.

In cold weather minnows, alive and swimming, came from every faucet. The water tasted and smelled of fish, and one had to look twice in his glass to see that he did not swallow one alive. Visitors from other cities made fun of us, and said that they would not live in Chicago, for the water was so impure.

Chicago was then the largest city in the West. It had many railroads; people were still coming from other cities; many grew rich; there were schools and churches, and the people numbered 350,000. The citizens became tired of the poor water supply, and said that something must be done.

Most of the men were away as soldiers in the war, but those who were at home were trying to find a way of getting pure water. Many plans were made, but were of no use. To be sure, there was plenty of pure water in sight, for it was found that Lake Michigan was as clear and cold as crystal about two miles from the shore. But the problem was, "how to get the water to the shore." A plan was thought of by Mr. Chesbrough, the city engineer, and we shall see how this plan was worked out.

The Crib

Nearly thirty-six years ago some men in Chicago thought of doing a strange thing. They thought of building a house out in Lake Michigan. It was to be a house that people could live in. It had to be very strong, for the wind blows hard out on the lake, and the waves are always dashing about and tugging and pulling. They never seem to be tired. It would not take them long to tear down a house no stronger than ours are.

What is it that makes a house firm and strong? It is the foundation which is laid several feet down in the ground. Was it not strange for these men to think of building a house out where there was no ground for a foundation? The water was deeper than some of our houses are high. Many people laughed at these men and said they could not do it. But these men were wise, and they were determined to carry out their plans. They went to work in this way. Since there was no ground for a foundation, they decided to make the ground. They decided to make an island in the lake.

First they made a curious box-like building. This they built on the shore near the river. It had five sides. Because it had five sides we call it a pentagonal building. This pentagonal building was nearly as large as the Palmer House. It had three strong walls, with a space of three feet between them.

Many tons of iron bolts were used to make the walls strong. Its floor and walls were covered with tar, and all the little cracks were stopped up. When little cracks are stopped up in a vessel, we say the vessel is caulked. Ships are tarred and caulked when made ready for the sea. Now do you see what these men were going to do with this building? They were going to float it right out on the lake.

When, after many days, the building was finished, crowds of people gathered to see it launched. They cheered again and again as it moved slowly down the bank of the river. It was moved on rollers, just as houses are moved. Finally it floated in the river. Tug-boats fastened ropes to it and puffed away, drawing the huge box behind them. On and on they went for miles. They stopped where the men wanted the island to be. Then they did something that will surprise you. They opened doors in the sides of the building. What happened then? It sank to the bottom of the lake. But it was so high that several feet remained above the surface of the water.

Then they brought a great many stones on boats. They thought a stone island would be stronger than an earth one. They put the stones in between the three walls of the building. They filled it up to the top. But they wanted a well on the island. They left a round hole in the center. They put a big iron cylinder in this hole. Stones were put in all around it.

Do you see how they had made a strong island? They had made a well, too. Now they had the island to build the house on. They built a nice, large house on it. Everybody was glad the men had done what they had determined to do. There was great rejoicing in our city.

The island and the house together were called the crib.

What was the well for? We shall find out another time.

The Tunnel

The cylinders of the crib opened into the tunnel, which was sixty-nine feet below the level of the lake. The tunnel was five and one-sixth feet high, five feet wide, and two miles long. The men who worked in the tunnel were miners and bricklayers. One party of men started from the crib and dug towards the shore, and another party started from the shore and dug towards the crib. The men were in this great hole for three years.

Although the men were jolly most of the time, yet they were always in fear. They thought of the terrible place they were in, with Lake Michigan over them. Their only light was from small lamps carried in each man's hat. What if the earth should cave in? Often they could hear the paddle-wheels of a steamer as it passed over their heads.

One day a hole was made, through which water began to drip into the tunnel. The men fled in terror, but soon returned, fixed the hole, and went on with their work. Sometimes they found gas in the gravel. After lighting this, they ran away until it had burned out, for it was very dangerous. Many visitors came, which greatly pleased the men. Whenever a person went into the tunnel, he had to put on a suit of old clothes. Little mules hitched to cars carried the visitors through the gloomy place. Many pieces of clay were carried away as souvenirs.

Steadily the two parties worked towards each other. On the 24th day of November, 1866, the morning papers said that they had but a thin wall of clay between them. The great question was, "Will they meet or will they pass each other?" The joy of the citizens was great, but that of the miners was greater when they found that they had met within the space of an inch. The men shook each other's hands, and loud shouts and hurrahs were heard on every side. Had they not reason to rejoice, when they had done the work which the world said could not be done?

When the tunnel was finished, it was joined to a large well in the city, which was under a building called the "Waterworks." This building had large pumps which pumped the water from the well into a reservoir. From the reservoir it was forced into large pipes which were laid under the streets of the city. Smaller pipes were joined to these large ones, and these carried the water into the houses. The faucets were turned, and the people received their water without any trouble.

The Kindergarten

Anne Elizabeth Allen

The two following stories will be used in connection with our spring work in the Kindergarten:

The Three Neighbors

Once upon a time there were three hens who had their nests side by side in the chicken-house of a large farmyard.

Mary was the name of the little girl who took care of them, and who had named them, and she fed them every day.

"Top-knot" was the name she gave to the old black mother, who was rather cross, and not a very good mother or neighbor. "Brownie" she called the little yellowish brown hen, who was a good mother but not a very kind, good neighbor. The third one of these three neighbors she named "Speckle," on account of her black and white spotted feathers—and *she* was the loveliest, kindest mother and the best neighbor there was anywhere about the farm.

Springtime had come, the nests were made, and the eggs were in them. On the nests, covering the eggs close and warm, sat the three mothers, waiting for their babies to peck the shells and come out.

It seemed as though eggs were never so long hatching, and the poor mothers were beginning to be anxious to get off their nests. At last, one warm, sunny day, Mother Speckle thought she heard a shell crack in the nest, then another and another. She peeped into her nest, and sure enough, out came ten little yellow heads, and soon she was walking proudly off with them to the barnyard.

Brownie began to be a little troubled, and Top-knot scolded outright: "Haven't we been sitting on our eggs quite as long as Speckle?" said she, "and haven't we just as much right to have our chickens hatch as she has?" But scold as she would, her eggs would not hatch.

Brownie's eggs cracked one by one in a few days, but even if only five of them did hatch, with so small a family she was glad to follow Speckle with her brood into the barnyard where all the other chickens, ducks, geese, and turkeys went every day to be fed.

Each morning when these two mothers came out they passed old Top-knot and stopped to talk with her. Speckle offered to sit on her eggs for her while she watched the little chicks, but poor old Top-knot was too cross to even feel her kindness, and still sat on.

One morning there was a little sound in Top-knot's nest that made her jump. "At last," thought she, "I am going to have my family"; but only one little brown, ugly, top-knot chicken came out, and the mother sadly led it out to the barnyard. Speckle was so glad to see them that she would not even notice that Top-knot had only one chicken and that such an ugly little fellow, but tried to cheer her up and make her happy.

Brownie looked at the little chick and walked away, making Top-knot feel worse than ever.

One morning when little Mary came into the barnyard she found that one of the mother hens was dead, and had left five little new baby chickens in the grass, all wet and cold and hungry. "What shall I do with them?" said she. "They need a mother to care for them." She thought of Top-knot with her one little chicken, and hurried to find her, with the five little motherless chickens in her apron. She found her after looking a long time, and stooped down near her dropping one little downy, yellow puff-ball gently beside her on the grass. Old Top-knot clucked an angry cluck and pecked at it. Mary knew there was no use trying to leave them, so she hunted up Brownie, who, you remember, had but five chicks, and five more, Mary thought, would make her a very nice family.

Brownie was scratching with her little brood over in the orchard when Mary found her and tried to leave the little orphans with her. The first little chick that she dropped Brownie did not notice, so she dropped a second one, but the mother hen drove it away, and Mary knew she must hunt up old Speckle and add five more to her large family.

Stooping beside Speckle, Mary dropped down one little one, and Speckle kept on clucking and scratching; she dropped another and Speckle kept on scratching,—she dropped another, but the mother still paid no attention until the five orphan chickens were with her ten children, when she clucked and walked off happily with them. How glad Mary was to find such a good friend for the poor little babies who were without a mother or any one else to care for them.

When Speckle with her large family went back to her little coop that night, Top-knot said, "Where did you get all those extra chickens? Oh! you took the orphans, did you? I wouldn't have them with my little one."

Old Speckle said not a word, but gathered the fifteen little ones closely under her warm mother wings and took the best care of them that any loving mother could. Day after day she helped them to scratch and earn their own living, and never seemed to know the difference between her own and the little adopted children. Brownie took care of her five little ones, day by day, and went often with Speckle to see poor Top-knot whose one little chicken had fallen into a slop-bucket and been drowned before any one could get it out.

Top-knot seemed to grow crosser and crosser, until Speckle little by little got her to help with the fifteen little ones. She would never sit on any eggs again, but was always ready to do what she could for Speckle, who hatched out so many chickens that year and always did what she could to make Top-knot happy. When the barnyard grew too full of chickens, Mary would sometimes sell off some, but never could she make up her mind to give up any of Speckle's chickens, for like their good mother, they were always the best of mothers and neighbors.

ANNE E. ALLEN.

Carl and Ponto

Away off on the seashore, in a dear little white house, lives Carl Seymour with his mother and father.

He has no brothers or sisters, but the nicest, queerest little playmates live all around him, that he loves and cares for, and I am going to tell you about them.

His father told him that if he would get John, the man, to help him bar off a corner of the fence, he should have a family of pigs to live there, and if they would put up a close fence, that he should have whole families of ducks and chickens to live behind it.

For days they worked, and soon had the homes ready, and Mr. Seymour got the pigs and chickens and ducks, and Carl cared for them and fed them every day.

On top of a tall post they built a tiny house; that was the home for two pigeons, who came to live there, and Carl thought he was as happy as he could be.

At last he had another playfellow given him, whom he grew to love better than any of the others.

This one was Ponto, a great, shaggy, Newfoundland dog,—with a white shirt front, white stockings, and two great, loving, brown eyes. He used to come under Carl's window every morning and say, "Bow-wow-wow!" ("Carl! get up!") Out of bed Carl would spring and hurry down to have a race before breakfast, and feed all his pets, while Ponto went along to help carry the food.

One morning Carl opened his eyes and looked around. It was queer, he thought, that he had not heard Ponto. He lay wondering, when — listen! what was that? Could it be Ponto's whine that he heard? He jumped up and ran to the window. There, just below, on the ground, lay Ponto, with his foot hanging limp by his side. He had broken it coming through the gate. Carl rushed downstairs, telling his mother as he went of the accident, and calling to John and his father to come and help him.

Mr. Seymour and John soon carried Ponto in and put him on a nice soft rug.

Little Carl was very, very sorry, but Mrs. Seymour comforted him as she bandaged up the poor, hurt leg, telling him that Ponto would soon be well if they took good care of him. Ponto licked Mrs. Seymour's hand to thank her. Carl saved the nicest bones and the juiciest meat, and took Ponto his meals, staying with him while he ate, and doing what he could for him.

In a short time Ponto was again able to run around, for his kind friends helped him to get well. How he and Carl did enjoy the long runs to the postoffice, so far away, where they went every day for the mail! Ponto was the postman, and always brought home the letters safely in a little mail bag that Mrs. Seymour made for him.

You know they lived on the seashore, and in the warm summer-time these two playfellows loved to take a dive and swim in the great ocean. Carl had a little bathing suit that he used sometimes to put on down at the water's edge, leaving Ponto sitting on the shore to take care of his clothes. Ponto was sitting there watching Carl away off in the water, one day, when he saw a great tall wave coming. Carl's back was turned to the wave so he did not see it. Ponto barked and tried his best to tell him by running up and down on the shore, but Carl did not notice him.

The big wave came nearer and nearer until it dashed over Carl.

Ponto did not wait; he leapt into the water and struck out in great sweeps for the place he had last seen Carl. The waves came high, and it was very difficult to swim against them, but he knew he must work hard, for Carl was in danger. He looked for some sign of Carl, but nowhere could he see even a speck on the water.

He was getting very tired, when away off he saw a tiny dark spot on a wave. He swam up close to the spot, and found that it was Carl's brown, curly head.

He knew that now there was harder work than ever to do. He caught Carl by the little bathing suit and began to swim with him toward the shore. Would he be able to carry Carl so far? Would his strength hold out? He swam until he was almost tired out, battling with the waves and carrying such a heavy burden.

At last he reached the shore, and dropping Carl he ran barking to the house.

Mrs. Seymour ran with him to where Carl lay. She was frightened indeed, and caught him in her arms and carried him home. They worked with him for a long time and rolled him up tight and warm in his little bed.

Ponto sat watching with his great brown eyes fixed on Carl's face, and at last saw Carl's eyes open just a tiny bit. He wagged his tail and gave a little joyful whine. Soon Carl opened his eyes wider and looked at him. Ponto jumped up and licked his hand, and ran around and around looking so happy that Carl could not help smiling at his funny way of telling his joy. When Ponto heard the dinner-bell ring, he hurried down and sat waiting for something.

Mrs. Seymour could not think at first what he wanted, and asked him, but Ponto wagged his tail and looked at the table; then Mrs. Seymour thought that maybe he wanted to take Carl's dinner to him, as Carl had done when Ponto was hurt.

She asked Ponto. He ran to the table barking and jumping up and down, saying "yes" as plainly as a dog can.

She put Carl's dinner in a little basket, and Ponto carried it up to him, and every meal-time found him at his post ready for the basket. He was such a good nurse that Carl did not mind staying in bed half so much as he would have done without him.

Soon Carl grew stronger, and was able to get up and play, and it was not long before they were out in the fields running and playing again, better and truer friends than ever before, loving each other more every day.

Anne E. Allen.

First and Second Grades

Harriet T. B. Atwood

Nature Study and Geography: The work during June will be centered in the field-trips taken by the children.

Field-trips proposed:

1. Visit to the Desplaines River at River Forest.
2. Visit to the ravine at Lakeside and the prairie west of Lakeside.
3. Visit to sand dunes at Dune Park, Indiana.
4. One or more field lessons each week in Lincoln Park.

Three phases of field-work will be considered:

I. The topographic forms of the regions visited, namely: The ravines, lake cliffs, beach, dunes, swamp, river bluffs, flood plain.

II. The vegetation of the areas. Characteristic flora of: prairie, upland forest, ravine, lake cliffs, beach, flood plain, swamps, dunes.

III. Animal life of the regions visited A study of the various animal forms found in swamp, forest, prairie, stream, beach, dunes, lake.

The main features of the work in the field will be: (1) Sketching with crayon and water-colors. (2) Taking photographs. (3) Collecting specimens. (4) Note-taking. (5) Imitation of bird notes. (6) Songs and games for the field. (See Course of Study for July, 1900.)

Indoor work:

I. Construction of landscape backgrounds representing the regions visited. Blackboard sketches will be made by all of the children, and the one most representative of the region will be chosen by the class to be reproduced in color upon gray paper. In front of the background a model of the region will be made in sand. To these models the children will bring their collections of soils, stones, and plants.

(See geography outlines for July and October.) The landscapes, accompanied by written descriptions, are to be sent ultimately to a school in Kentucky, with which we are in correspondence, in order to let the children of that school see the kind of region which lies about Chicago.

II. Further investigation in laboratory and library of questions opened up by the field-trips. Questions asked by the different children while in the field will be recorded by the leader, and an opportunity will be afforded for such investigation as will help the children answer their own queries.

III. Planning of a morning exercise on the subject of birds, in which the children will imitate the bird notes heard in the field.

Art: Illustration of stories in crayon and water-color. Making of landscape backgrounds. Weekly painting of the June landscape in Lincoln Park. Sketching in the field. Painting of trees, flowers, birds, insects, and animals seen on field-trips.

History: I. Continuation of work on agricultural tools. (See history outline for April.)

II. Clothing. In the fall the subject of man's clothing was discussed by the children, and a study of wool was undertaken. The class invented ways to card and spin the wool, and prepared some thread to be used in their weaving. Later on in the year the children worked with cotton in a similar way.

During June, linen will be investigated, and also other fabrics made by people who live in countries where the climate all the year round is similar to our summer. If possible the children will weave some article from such coarse linen thread as they are able to prepare from the flax. A trip to Hull House to see flax spinning done by the Irish and Italian women will be taken at this time.

Literature: Longfellow, *The Story of Pearl Feather;* Cox, *Myths of the Aryan Nations*, *Myths of Persephone*, *Balder*, *Arachne;* Cooke's *Nature Myths*, *Indian Legend of the Robin*.

Industrial Art: Decoration of kites. Making of lunch-boxes for the field day planned by the children of the primary grades for the primary children of the Half Orphan Home. Weaving of baskets for use on field-trips.

Manual Training: I. Completion of the miniature homes begun by the First Grade in October.

II. The children have been allowed to choose the articles which they wish to make in the shop during June. The articles chosen were, doll-beds, doll-chairs, a sword and shield, book-shelves, picture-frames, boats.

Correlated Number: Weighing and measuring necessary in making experiments with the different kinds of stones, soil, water, etc., brought home from field-trips. Planning of field note-books, books to hold printed stories, and portfolios to hold the work of the year. Planning of article to be made in wood.

Since the work planned for June in nature study and geography is based upon field-work yet to be done, and the manual training is different for each individual, it is impossible to outline the number work in detail.

A sketch of the article to be constructed in the shop will be required of each child, and following the sketch, a working drawing will be made to be used as a guide in the shop. Whenever it is obvious that the children need more skill in combining numbers in order to carry out their plans economically, drill will be given.

Writing, Spelling, English: Field notes. Descriptions of regions visited. (See "Notes on a Trip to Highwood" in this issue of the COURSE OF STUDY.) Descriptions of birds and flowers to be used as guessing games. Planning of the printed headings to be placed in field note-books, and placing of same in note-books. Placing of words in dictionaries. Written dramatization; subject to be chosen by the children from year's work.

Reading: Re-reading of the printed reading lessons of the year as the children bind them. Selections from the First and Second Readers bearing upon spring subjects. Lesson on "Highwood," and that on "Buds" in June COURSE OF STUDY. Texts of songs.

Music: (MISS PAYNE.) Songs: *The Violet*, Reinecke, Fifty Songs; *Dandelion Fashions*, *Clouds are Passing o'er the Sky*, *The Rain Coach*, all by Eleanor Smith, in Songs for Little Children, No. 2; *Oriole's Nest Song*, Modern Music Series, First Book.

Practice on the intervals of the fifth and third octave, and scale fragments, derived from the songs, as incidental drill.

Rhythm: The pulses found in the *Spinning Song* (Reinecke), illustrated by free arm movement as each child hears it; circling, one swing to each measure, and two swings to each measure; the same with the chalk on the blackboard.

After a visit to the blacksmith shop, the same idea will be carried out in the variation in swings of the hammer as the children play the game. The blacksmith's song of *The Forge* in the March COURSE OF STUDY, *The Blacksmith*, Mrs. Gaynor, and *The Blacksmith*, in Songs for Little Children, No. 1, will be played in the same way.

Speech, Oral Reading, and Dramatic Art: I. Hearing and reproducing bird notes on field-trips. Dramatization of one of the bird stories familiar to the children. Bird concert given by the children.

II. Poems to be studied: *The Great, Wide, Beautiful, Wonderful World*, Whittier's *Child Life*.

Physical Training: (CAROLINE CRAWFORD.) In June a festival of Greek games and sports will be given. For the first time the children will be allowed to compete in height, distance, etc.; but such competition will be in relation to standing height rather than absolute height or distance jumped. The field will be measured by them, and distances chosen by vote.

References: Chapman, *Bird Life*, *Bird Studies with a Camera*, *Handbook of Birds of Eastern North America;* Wright and Coues, *Citizen Bird;* Mabel Osgood Wright, *Birdcraft;* Coulter, *Plant Relations* and *Plant Structures;* Cowles, *Plant Societies of Chicago and Vicinity;* Salisbury and Alden, *Geography of Chicago and its Environs;* Comstock, *Insect Life;* Jordan and Kellogg, *Animal Life.*

Third and Fourth Grades

Gertrude Van Hoesen

Nature Study: The relation of water and light to plants, as planned in the May outline, will be continued. In addition, the following new points will be considered:

1. The relation of insects to plants: i. e., bees, butterflies, moths, flies, ants, earth-worms, slugs, cut-worms, etc.
2. Bird-life.

During a recent excursion the children saw thirteen different kinds of birds. By means of a visit to the Academy of Science, they were able to identify and become more familiar with these birds. During the remainder of May and June, they will look for and study the habits of these birds and others that nest in the park, always using the Academy and the library to supplement their observations.

In connection with their geography, the Fourth Grade will make a study of the grains and other plants which are grown in the great areas throughout the Mississippi Basin. They will also make a study of the animals native to the different sections of the basin.

Geography: THIRD GRADE. Continuation of the study of illumination, and a general summing up of the requisites of a good city.

FOURTH GRADE. During the year the members of the Fourth Grade have been studying the city of Chicago from all the points of close contact. During the last month they have seen that it is a large commercial and railroad center by reason of its situation. In answering the question, "From where do all of these imports come?" it was thought best to consider the Mississippi Basin, which is one of the chief sources of supply.

By means of descriptions, stereopticon views, pictures, and reading, the children were taken over some of the principal railroads, in such a way as to include the features of the entire basin. For closer study the basin was divided into three parts—the eastern slope, as a whole, and the western slope north and south of the C. B. & Q. and the Union Pacific railroads.

The study of the basin was always from an industrial standpoint, the question always being, "What are the people doing?" The study of structure is necessary at *every* point to answer the question, "Why?"

The first trip was south on the Illinois Central to the Gulf of Mexico, back by the Mississippi River, then east over the Pennsylvania Railroad to Pittsburg, from there going south again along the crests of the Alleghanies following the water-parting to the Gulf.

By this time the children were able to see the great eastern slope as a series of pictures representing great industries, and divided it into regions occupied by grain, cotton, sugar, forests, etc.

The second trip will be along the Northern Pacific to the western water-parting, back to the Mississippi by way of the Missouri, beginning at Yellowstone Park, and again west to the mountains over the C. B. & Q. and the Union Pacific railroads. What are the great industries in that section of the country? Comparison with the eastern slope. What is the cause of the difference?

The third trip is again west over the Santa Fé Railroad to Denver, back to the Mississippi River by means of the Arkansas River, and possibly a short trip up the Red River.

In every case the structure of the country, the temperature, winds, and rainfall will be necessary to explain the industry. For instance: What is the reason for having the great irrigating ditches that we see in the West? This can be answered only by considering the cause of our great Western plains.

History: THIRD GRADE. (See work under manual training.)

FOURTH GRADE. The textile industries of Chicago.

Literature: All of the reading, both poems and prose, in connection with spring, birds, flowers, etc., that can be found in the library.

Manual Training (History): THIRD GRADE. (CORA CHAMPLIN.) The children will cast their spear-heads in bronze this month. It will be necessary for them to make models in wood first to be used in making the mold for the cast.

They have been studying Greek charts and books for both the general form and the decoration, which they must take almost literally since it is to be of Greek design.

They will draw them first on paper and afterward on ⅞-inch pine, which will be of sufficient thickness to model with carving chisels into the desired form.

Next, they will make the flask, which consists of two rectangular frames of the same size, made of ⅞-inch pine, and from two to three inches deep. Each frame should be hinged at one corner and hooked together at the corner diagonally opposite, so that it may be opened without disturbing the mold when the flask is to be removed. The frames should be large enough to allow at least three inches of space between the edge of the model and the frame. To insure the frames remaining in place during the process, a half-inch strip of hardwood, rounded so it will slip through an ordinary staple and the height of the two frames, may be nailed to either end of one, which is the "drag"; the staples being placed in corresponding positions in the ends of the other one, which is the "cope."

The cope is placed on a smooth board somewhat larger than the frame, and the model placed in the center. Lycopodium should be dusted over it sufficiently to keep the sand from adhering to the wood. Perhaps the most convenient way to handle it is to put it in a small cheesecloth bag so that it may be shaken on lightly.

Molding sand is used for the remainder of the mold. Ordinary sand will not answer because it will not pack, and if moistened, it will cool the metal so rapidly as to roughen the surface, and sufficient steam will be formed to burst the mold.

Sift in enough sand to cover the model to the depth of at least an inch, so that all that forms the surface and comes in contact with the model will be free from lumps; fill the remainder of the cope with the sand, and pound it gently down with a wooden mallet, having it so full that it may be leveled off with a straight edge to insure its being flush with the edge of the frame, so that it will not settle down when it is turned over onto another board. After turning it over, remove what was the base-board, and the model will be on top with one side visible. Dust this side with lycopodium, and over the entire surface sprinkle common white sand, which will act as "parting sand" to keep the two halves of the mold separate.

A round stick about an inch in diameter with a nail in one end makes a good "gate post" and should be stuck upright into the sand, the depth of the nail, about an inch and a half from the edge of the model. Place the drag on top, being sure the hooked corners are together and the pegs in the staples. Again sift in the sand and fill the frame level as before. After pounding it down, remove the gate post, being careful not to crack the sand in doing so, and press back the sand at the opening so as to leave a funnel-shaped mouth into which the metal is poured. Place a board on top and remove the top frame, without jarring it. The impression is now seen of the upper half of the model. The sand around the edge of the model, which is still in the first half, should be moistened so it may be pressed down more closely before the wood is removed. A sponge with a small camel's-hair brush inserted is the best thing to use, the water being supplied from the sponge as the brush follows the outline. The model should have two small holes drilled in at an angle on one side before it is put in, so that two long nails may be inserted by which to lift it out. The small hole made by the nail in the gate post will indicate where a narrow channel is to be cut leading into the impression as a path for the metal as it is poured in. Replace the top half, and it is ready for the metal.

For melting lead an iron pot may be used, and the lead melted in an ordinary

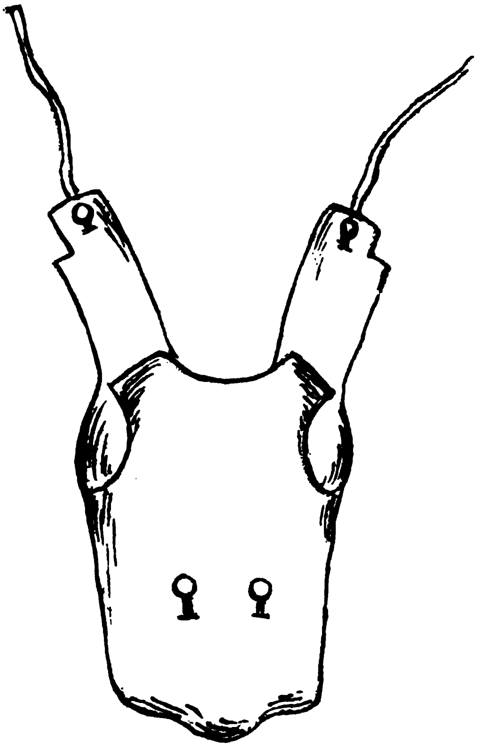


Fig. 1.

furnace, but for bronze a graphite crucible is necessary in which to melt it. For obtaining sufficient heat either a small blue-flame gas stove like that of a plumber, or a charcoal burner with bellows, may be used.

If the spears are finished in time, the children will make helmets and breastplates of cardboard.

To get the shape and size of the head for which the helmet is to be made, make a pattern first of paper by holding it against the side of the head and cutting it large enough to reach to the center, forming one half. By clipping the edges and lapping them, or cutting them out, it can be made to curve into shape. Cut the two sides from the cardboard, and either sew or glue them together down the center, afterward covering it with whatever color is desired for the metal to be represented.

The breastplate is perhaps best made by taking a large sheet of cardboard and gluing it together in a cylindrical shape, or rather that of a truncated cone, large enough to slip over the child's shoulders. Cut the body of it from the lower end so as to leave the larger end for the shoulders. There will be enough left in length to cut the shoulder strips continuous with the back of the armor, as in Fig. 1.

One method of fastening it is to cut a slit in the cardboard wide enough to admit a loop of tape with a ring on it, and glue the ends on the inside to the cardboard. A long piece of tape may be attached to tie them down to the rings fastened lower on the body. The plate may be covered with silver paper, or tin foil, or any colored paper which will represent the metal, as with the helmets. This is merely a suggestion of design, and any other form may be used in a similar way.

Third and Fourth Grades. In both manual training and textiles an exhibit of work of all kinds is being made for a school in the mountains of Kentucky. The children are planning and making

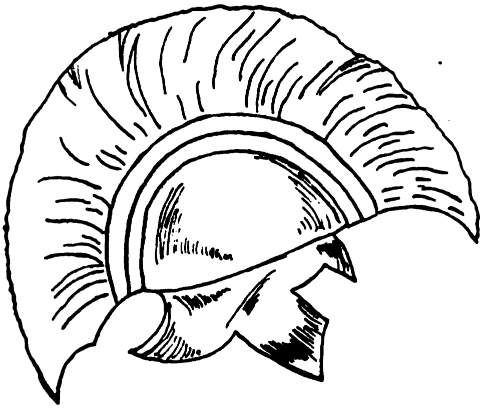
BREASTPLATE

HELMET

things for that purpose, in wood, embroidery, basketry, and other forms of hand-work.

Art: Illustrations of nature — birds, flowers, etc., in our environment. Illustrations of stories and of the scenes on the journeys taken in the geography class. One of the special interests just now is the painting of all of our wild flowers to bind together for this exhibit.

Music: (MISS PAYNE.) Songs that express the moods and phases of nature in early summer will be used. The *Song of the Forge* will be used in relation to their work upon Greek games and weapons, also the *Sword Song*, Von Weber, in Songs of Life and Nature. *Dark Brown is the River*, by Edward Smith, in Song Pictures, and *The Canadian Boat Song* will be sung as having general interest. The easy rounds which the children began in May will be continued in June. They will write them, taking them from the heard melody. They will find the agreeable chords made when sung, and then the same chords in the accompaniments of their old songs.



HELMET

French: (MLLE. ASHLÉMAN). A little visitor told the children of the Third and Fourth grades the story of *La Belle aux Cheveux d'Or*. In June this story will be used for reading lessons.

Enigme

Solution de l'énigme de mois de mai—"la bergère."

La Belle aux Cheveux d'Or

Il y avait une fois un roi qui était très riche et très bon. Il avait une fille qui était très belle. Elle avait de longs cheveux plus fins que de l'or. Elle portait toujours une couronne de fleurs sur la tête, et tout le monde l'aimait parcequ'elle était si bonne et si belle.

Son voisin était un jeune Roi. Il apprit que la Belle aux Cheveux d'or était très bonne: et, pensez donc, il se mit à l'aimer. Bientôt il aima tant la princesse qu'il n'avait plus soif et qu'il ne voulait plus manger.

Il choisit un ambassadeur et l'envoya chez la princesse. Il lui dit d'être sûr de lui amener la Belle aux Cheveux d'or. L'ambassadeur est allé chez la princesse. Il lui fit son petit message. Mais la princesse répondit, "Non, monsieur l'ambassadeur, je vous remercie, mais je ne veux pas me marier."

L'ambassadeur bien triste de ne pas avoir réussi, retourna chez son roi. Il rap-

porta tous les présents qu'il avait portés à la princesse. Vous voyez, cette petite princesse était très sage, elle ne voulait pas accepter les diamants de son voisin.

Quand le Roi apprit que l'ambassadeur n'amenait pas la Belle aux Cheveux d'or, il se mit à pleurer comme un enfant.

Il y avait à la cour un jeune garçon, beau comme le soleil. Parcequ'il avait beaucoup d'esprit on l'appelait Avenant. Tout le monde l'aimait à l'exception des envieux.

Avenant lorsqu'il apprit que le Roi pleurait, dit, sans y prendre garde: "Si le Roi m'avait envoyé vers la Belle aux Cheveux d'or, je suis certain qu'elle serait venue avec moi."

Alors les envieux sont allés au Roi, et ils ont dit. "Sire, Avenant dit que si vous l'auriez envoyé chez la Belle aux Cheveux d'or, il l'aurait amenée. Il prétend être plus beau que vous."

Le Roi se mit en colère et il s'écria, "Ce garçon se moque de moi; qu'on le mette en prison et qu'il y meure de faim!"

Un jour le pauvre Avenant, presque mort dans sa prison, couché sur de la paille dit en soupirant: "De quoi se plaint le Roi? Je ne l'ai jamais offensé et je l'aime encore de tout mon cœur." A ce moment là le Roi passait par hasard; il s'arrêta et il écouta. Les larmes lui vinrent aux yeux, il ouvrit la porte, et il appela Avenant. "Que vous ai-je fait, sire?" dit Avenant aux Roi, se mettant à genoux devant lui.

"Tu t'es moqué de moi et de mon ambassadeur."

"Sire," répondit Avenant, "ce n'est pas vrai, mais je suis persuadé que j'aurais si bien fait connaître vos grandes qualités à la Belle aux Cheveux d'or qu'elle serait venue avec moi."

Le Roi se répentit de la peine qu'il avait fait à Avenant, et il l'invita à souper avec lui. Au dessert le Roi dit à Avenant, "Mon ami, j'aime toujours la Belle aux Cheveux d'or; va voir si tu peux l'amener à mon palais."

"Soit," dit Avenant, "je veux vous obéir en toutes choses. Je partirai après demain."

"Oh!" dit le Roi, "je vous donnerai un grand équipage."

"Ce n'est pas nécessaire," répondit Avenant; "donnez moi seulement un bon cheval et des lettres de votre part."

Le Roi était charmé et il embrassa le jeune homme.

Avenant partit à la pointe du jour. Il passa à travers un grand bois. Dans ce bois il vit une pauvre femme. Elle était assise sur l'herbe et elle pleurait. Avenant en eut pitié et il lui dit, "Qu'avez-vous donc, ma bonne femme?"

"Ma petite fille est très malade, elle va mourir parceque je suis si faible, que je ne puis aller au village lui chercher de la médecine. Voilà huit jours que je n'ai fermé l'œil, et je n'en peux plus."

"Ma pauvre femme, j'ai pitié de vous. Le Roi m'a envoyé chez la Belle aux Cheveux d'or. Le Roi aime cette princesse de tout son cœur. Mais le Roi se porte bien, la princesse aussi; votre petite fille est malade, elle a besoin de secours. Eh bien, j'irai soigner votre petite fille. Quand elle sera bien portante, je continuerai mon voyage."

"Ah, monsieur, que vous êtes bon, que Dieu vous bénisse!"

"Restez-ici, ma bonne femme, j'irai vite chercher la médecine. En revenant je passerai par ici et je vous aiderai à marcher chez vous. Quelle est la médecine vous voulez?"

La vieille femme lui donna un petit morceau de papier. "Le nom est écrit ici."

Avenant prit le papier et s'en alla vite au village. Arrivé au village il entra dans une petite boutique où il acheta la médecine sans aucune difficulté. Le marchand lui donna la médecine dans une drôle de fiole. Alors il alla vite retrouver la pauvre femme.

Quel fut son étonnement, elle n'y était plus!

"Elle a eu peur de laisser sa petite fille seule. J'essayerai de trouver la maison moi-même."

Avenant marcha longtemps. La nuit tombait, les étoiles se montraient. Avenant se mit à appeler.

"Mais où êtes vous donc, il y a longtemps que je vous cherche?"

Une voix lui répondit: " Ici, venez ici, vous avez bien fait de nous chercher."

Tout à coup un magnifique palais se dressa devant lui. Il entendit de la belle musique, mais la musique était si triste qu'Avenant se mit à pleurer.

"Pourquoi votre musique est-elle si triste?" demanda Avenant à un soldat qui marchait devant le palais. "Parceque la princesse meurt et elle a commandé cette musique. Une méchante fée a dit, qu' à l'âge de dix-huit ans la princesse mourrait, à moins qu'un jeune homme n'eût pitié d'elle pensant qu'elle n'était qu'une pauvre petite fille il devait aller lui chercher de la médecine dans un petit village appelé le village des fées. C'est la marraine de la princesse, une bonne fée qui a fait cette condition lorsque la méchante fée a dit qu'elle devait mourir.

" Mais le jeune homme n'arrive pas, et elle va mourir! Notre belle, belle princesse!"

"Oh!" s'écria Avenant, "j'ai la médecine, j'ai la fiole; tenez, prenez la, apportez cette fiole chez le Roi afin que la princesse la prenne tout de suite."

* * * *

Bien vite le ton de la musique changea; elle devint gai. De brillantes lumières parurent à chaque fenêtre du palais. Avenant se crut au paradis lorsque la belle princesse elle-même vint s'agenouiller devant lui afin de le remercier.

"Vous pouvez m'amener où vous voulez; je vous suivrai au bout du monde!"

Quelques jours après, lorsque la princesse et Avenant voyageaient vers le Roi, un courrier les arrêta, s'agenouilla devant Avenant et lui donna une lettre.

Que pensez-vous qu'il y avait dans cette lettre?

Le Roi était mort. Avant de mourir il avait choisi Avenant pour son successeur, et il le priait aussi d'épouser la Belle au Cheveux d'or.

Fifth Grade

Willard Streeter Bass

History: The central point of the year's work in history thus far has been the industrial and social life of the early colonists in America, and the study has been based upon the manner in which the various settlers sought to satisfy the immediate need for food, shelter, and clothing, to acquire wealth by trade, and to reduce the wilderness into peaceful and populous colonies. Incidentally the pupils have obtained an idea of the love for religious and political freedom which induced many of the colonists to leave comfortable homes for the hardships of frontier life. They have also seen the vigorous pioneer life of the colonists develop the love of freedom even in those of their number in whom it was not at first strong. The work of this month will be to show how this love of freedom and fear of even the shadow of tyranny led to the complete independence of the Colonies.

The starting-point for the work on the Revolutionary War will be the story of the battles of Lexington and Concord, as the class was much interested in these events when their anniversary was celebrated by the school. The story will be retold to the class, illustrated with stereopticon pictures, and made in every way as vivid as possible. The children will reproduce in chalk drawings the points which have most appealed to them, and will write the story of the day.

The class will then follow the rapid gathering of the militia around Boston, their efforts to keep the British in that city, and to cut off their supplies from the country, and finally the attempt of the Americans to dislodge the British from the city by occupying the heights at Charlestown. The story of the battle of Bunker Hill will be told, and a sand-modeled map of Charlestown will be constructed, the position of the Americans and British located, and their movements during the day followed. Stereopticon pictures will be shown and the dramatic interest of the occasion will be used as effectively as possible.

The men behind the redoubt will be contrasted with those in front of it. The latter, uniformed, well-drilled, unthinking servants of the royal will, were very unlike the brave, undisciplined fighters in homespun at the top of the hill. The class will find out what kind of homes the latter came from; why they wore homespun; what they had to eat in their homes; why they had no tea; what they used in place of it; what their occupations were; and why they had resisted the march of the British at Concord, and had taken the aggressive at Bunker Hill.

The answer to the last question will show some of the annoyances placed in the way of American trade and manufacture; how the Colonies could trade only with England; how many things, such as iron products, could not be manufactured in the Colonies; and finally the exasperating tax on tea and the story of the Boston tea party.

Drawing: An illustration of the battle of Lexington and Concord; an illustration of the battle of Bunker Hill.

Writing: The stories of Lexington and Concord and of Bunker Hill will be written out by the class.

References: Lodge, *The Story of the Revolution*, Ch. I–III; Winsor, *Narrative and Critical History of America*, Vol. VI, Ch. I–II; Morris, *History of United States*, pp. 172–200; Eggleston, *History of the United States and its People*, pp. 161–167; Frothingham, *Siege of Boston*.

Geography: The work for the month will be the study of the Western Highland of North America, a review of the parts of the continent previously studied, and a study of the relation of the various sections to each other and to the whole continent.

Topographically the Western Highland may be divided into three sections—that north of Puget Sound, that between Puget Sound and the Isthmus of Tehuantepec, and that south of the Isthmus of Tehuantepec.

The region north of Puget Sound will first be studied. After the class has obtained an idea of the topography of the region as a whole, it will seek a more detailed knowledge of the scenery and vegetable and animal life of the region by following an ideal summer excursion, via the Mackenzie River to the Arctic Ocean, and another via Skagway and the White Pass to Dawson City.

The region between Puget Sound and the Isthmus of Tehuantepec will be studied as a great basin whose walls are broken for the exit of the Columbia and Colorado rivers. The wonderful scenery in this region will be studied from pictures, and the class will use the simple principles of the action of weathering and erosion to determine how some of it was formed. The scarcity of rainfall in this region will also be noticed, a reason for it found, and the resulting vegetation described. The climate and vegetation of California will be compared with that of the Great Basin, and the influence of the Sierra Nevada mountains upon climate made plain.

The region south of the Isthmus of Tehuantepec has now a special interest on account of the proposed Nicaragua and Panama canals. The class will examine the topography of the region carefully enough to see some of the advantages of each route, and will study climate and people in order to perceive some of the difficulties in the way of constructing these canals.

The final work of the class will be the making of a map of North America, showing the relief in black and white and the character of the vegetation in color.

Sand Modeling: Maps of the three sections of Western Highland. Map of North America.

References: Carpenter's Geographical Readers, *North America*, pp. 235–316, 327–352; Tarr and McMurray, *Home Geography*, pp. 176–189; *North America*, pp. 281–330, 378–393.

Nature Study: METEOROLOGY. The weather records will be continued in the same manner as in previous months. The observations with the skiameter will also be continued. At the close of the month the class will have a record of the sun's slant from the winter to the summer solstice. It will also have a record of the average temperature for each month, and will be able to form an estimate of the effect which the slant of the sun's rays has upon temperature. An immediate application of this knowledge will be made in showing the influence of latitude upon climate. The continent of North America is the subject of the month's work in geography. The class will determine the location of various parts of the continent upon the globe, and will find the slant of the sun's rays for several sections—such as Alaska, the northern boundary of the United States, and Mexico—at the equinoxes, the summer and the winter solstices.

BOTANY. During the past month the class has found that water is a necessity for plant life, and has formed some idea of the quantity of water which is supplied to plants in the form of rain. In this month a study will be made of the means by which the plant secures and loses moisture.

The class will obtain plants from places in which the moisture is present in the soil in widely varying amounts, such as swamps, prairie, and sand ridge, and will examine their roots to see if there be any characteristic peculiar to the plants growing in dry and in wet places. Similar observations will be made upon the leaves.

To show what becomes of at least part of the water which a plant takes in, the experiments under transpiration, described in the May COURSE OF STUDY,* will be performed by the class.

Painting: The frequent painting of the landscape will be continued through this month. The observations upon the structure of the plants of various areas will all be recorded in color.

References: Jackman, *Nature Study in the Grammar Grades*, pp. 133–135, 380–391; *Nature Study and Related Subjects*, pp. 133–137, 159–163.

Number: To completely understand the effect of the slant of the sun's rays upon climate, it is necessary to know the exact area covered by a beam of constant cross-section at different latitudes. For this purpose the class will find the noon elevation of the sun at a given place, in degrees, by adding to or subtracting from the latitude of the place the number of degrees which the sun is north or south of the equator. Then it will represent a beam of sunshine two inches square by two parallel lines two inches apart, and with the aid of a protractor will draw a horizontal line, making the required angle with the beam of sunshine. Upon the part of the horizontal line intercepted by the parallel lines the class will construct a rectangle with an altitude of two inches. This rectangle will evidently represent the area covered by a beam of sunshine two inches square under the required conditions. Such rectangles will be constructed for the latitude of Dawson City, Quebec, Chicago, New Orleans, and Mexico, and at the times of the winter solstice, the vernal equinox, and the summer solstice.

A consistent attempt has been made during the year to have the number work so correlated with the geography and science that the pupils should feel the necessity for a process before they were required to learn it. Facility in the arithmetical operations can come only through constant repetition, and for the sake of gaining this, a certain number of drill problems in common and decimal fractions will be given during this month.

Manual Training: (MR. CARLEY.) For the last month of the year the children will be allowed to follow their own ideas, as far as possible, as to what they shall make in wood-work. Each child will be asked to bring a sketch of what he would like to make—and from this, modified to suit his ability, and corrected as to construction and design, a working plan will be made, to be followed in the manual training shop.

Music: (MISS PAYNE.) The children in this grade are at the age when the dramatic in songs appeals to them very strongly. The songs of nature and home will give way somewhat to the historic songs. The history of Canada taken in May gives interest to some of the characteristic Canadian French songs. *The Canadian Boat Song* will be sung.

Songs: *The Sword Song*, Von Weber, and *The Harp that once in Tara's Halls*, from Songs of Life and Nature; *The Forge* (see March COURSE OF STUDY); *Oriole's Nest Song*, First Book Modern Music Series; *Dark Brown is the River* (see "Music" under First Grade outline for this month).

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* Page 836, "Directions for Pupils in the Grammar Grade," I, 4. Experiments 1-3.

Sixth Grade

Edith Foster Flint

History and Literature: Though the children have been devoting considerable time to the story which they are writing in connection with their study of the Crusades, work on it has necessarily been slow. This is true because of their lack of practice in writing and their inadequate knowledge of the time—the one deficiency necessitating much revision, the other considerable looking up of topics such as dress, customs, home-life, education, and so forth. There has been, of course, a wide difference in the ways in which the children have handled the story, some showing a good deal of individuality and others following very closely models such as *Ivanhoe*.

During this month the work in binding, illuminating the title-page, and painting the frontispiece will continue, the teacher employing part of the time while the children are thus engaged with hand-work in reading aloud from *The Boys' King Arthur*. The children have received suggestions for their hand-work from visits to the manuscript collections in the Newberry Library and the Art Institute. For alphabets they have had reference to E. F. Strange, *Alphabets;* L. F. Day, *Alphabets, Old and New;* F. S. Mayer, *Hand-book of Ornament.*

Some of the children have chosen to make, in imitation of the publishers, book-plates for themselves, and others have made for the title-page a small design in black and white, suggestive of the story to follow. A good deal of ingenuity and taste has been shown in the making of these designs.

At the close of this month, which is also the close of the school year, a short time will be devoted to summarizing the results of the Crusades, with particular reference to the impulse afforded by the importation into Europe of the mariners' compass and the broadening of men's minds by travel. This will lead to the consideration of the Portuguese voyages and the discovery of America. The aim will be to show that European history and American history are not separate things, but that the discovery of America was the natural outgrowth of movements affecting European thought.

Geography: The geography subject this year has been *Eurasia*. The aims sought to be accomplished through the study have been several. The customs, manners, dress, institutions, and beliefs of certain peoples—expressions of their ways of thinking,—moving against the background of their natural environment—the clear imaging of these has been one aim. To understand the peoples without the environment would be impossible; to study the environment without the peoples would be to lose meaning. This study of present environment, or climate and landscape, has necessarily led to that of landscape-making, or physiography. A clear idea of the forces at work on the earth's surface, their methods of operation, and their importance has been a second aim. In considering the peoples of vari ous countries, particularly those of China and India, whose modes of thought are so different from our own, pains have been taken to present them dispassionately, so that the pupils might feel, not critical and antagonistic, but sympathetic. Open-mindedness, then, has been a third aim—open-mindedness and a sense of the brotherhood of man.

The methods and materials used have been much chalk-modeling, both of maps and of typical landscapes; landscape work on paper, both in paints and colored chalk, the latter pictures being of large size; sand-modelings; stereopticon views and pictures from the library; verbal descriptions given by teachers and by pupils who have traveled, and taken from literature; dramatic representations; and field-trips.

Number: Much of the number work of the year has been done in connection with the science and geography. It has been found, however, that the pupils have been hindered from using number as an aid to understanding other subjects by their lack of technical proficiency. Consequently the last month will be devoted to drill work, particularly in fractions and percentage.

Music: (MISS PAYNE.) Most of the songs will be the same as those used in the Seventh and Eighth grades this month. Simple rounds will be sung and read from the staff, in several keys, and transcribed from ear.

Songs: *Old King Barbarossa, Oriole's Nest Song*, First Book, Modern Music Series.

French: (MLLE. ASHLÉMAN.) The study of the subject of chivalry will be continued, and the work for the month will be based upon the accompanying dramatization:

Un Pique-Nique à Versailles

Fadette (*gaiement*). Qu'il fait beau aujourd'hui. Vraiment les tartines ont meilleur goût quand on les mange en plein air. Quelle bonne idée tu as eue, maman, d'arranger ce pique-nique au parc au-lieu de nous faire passer l'après-midi dans notre chambre à étudier.

Henri (*allant à sa mère avec enthousiasme*). Nous y retournerons bien souvent cet été n'est-ce pas, petite mère?

Marie. Regarde, Guillaume. Tu sais, je déteste les croûte, eh bien! je n'en ai même plus le plus petit morceau.

Mme. Lemaître (*lui donnant une petite tape sur la joue*). Voilà ce que c'est que d'avoir faim. La faim donne du goût à tout.

(On entend une musique militaire, "La Marseillaise.")

Mme. Lemaître et les enfants (*se mettent à chanter*).

"Amour sacré de la Patrie,
Conduis, soutiens nos bras vengeurs!
Liberté, liberté chérie,
Combats avec tes défenseurs!
Combats avec tes défenseurs!
Sous nos drapeaux, que la victoire
Accoure à tes mâles accents;
Que tes ennemis expirants
Voient ton triomphe et notre gloire!
Aux armes, ci-toyens!
Formez vos bataillons!
Marchons! Marchons!
Qu'un sang impur abreuve nos sillons!

Guillaume (*aperçoit Mlle. Convert, la gouvernante, à travers les arbres*). Voilà, Mlle. Convert qui vient nous faire notre cours d'histoire. (Toute la petite bande se précipite vers Mlle. Convert.)

Joseph (*galamment*). Mademoiselle, il nous reste encore une sardine, deux olives, et un biscuit (*il court vers le couvert met la sardine, les olives et le biscuit sur une assiette. Avec un petit salut*). Permettez, mademoiselle, que je vous les offre.

Mlle. Convert (*le regardant avec un sourire*). Merci, Joseph. Je viens de dé-

jeûner. (*Se rapprochant du couvert.*) Mettons tout ceci dans les panirs, plions la nappe, asseyons nous sur l'herbe et commencons nos petites anecdotes au sujet du bon roi Saint Louis.

(*Mme. Lemaître et les enfants font cercle autour de la gouvernante, Mlle. Convert regardant Mme. Lemaître.*)

Mlle. Convert. Le mercredi, nous racontons toujours des anecdotes relatives aux personnages que nous venons d'étudier. Voulez-vous commencer, Mme. Lemaître?

Mme. Lemaître. Mais, oui, mademoiselle! Vous voulez quelquechose à propos du roi Saint Louis. Voyons! Chez Saint Louis, la bonté envers ses serviteurs était si grande qu'elle ressemblait à l'affection. En même temps qu'il exigeait de ses serviteurs une moralité presque sévère. Il passait volontiers sous silence leurs petites fautes, les traitait avec douceur, avec égards, satisfaisant l'amour propre des hommes, les relevant à leurs propres yeux. Louis visitait ses domestiques quand ils étaient malades, quand ils étaient morts, il faisait chanter pour eux la messe des morts.

Son grand-père, Philippe Auguste, avait renvoyé un vieux serviteur parceque son feu pétillait et que Jean chargé de l'entretenir, n'avait pas su empêcher ce petit bruit.

Saint Louis avait repris le domestique. Le roi était de temps en temps atteint d'une maladie dans laquelle sa jambe droite entre le mollet et la cheville devenait enflée, rouge comme du sang. Un jour, le roi, en se couchant, voulut voir de près la rougeur de sa cheville. Jean, qui tenait maladroitement une chandelle allumée auprès du roi, laissa tomber une goutte brûlante sur la jambe malade, et le roi, qui était assis sur son lit, se rejeta en arrière en s'écriant, "Ah! Jean, Jean, mon grand-père vous donna pour moindre chose congé de son hôtel!"

Fadette. Le pauvre roi; quelle honte! Moi, à sa place, je me serais fâchée.

Louis. Je crois bien!

Mlle. Convert. Un maître doit être charitable et Saint Louis avait la grandeur d'âme royale. Louis, qu'avez-vous à nous dire?

Louis. Un jour, Saint Louis taillait le pain des pauvres et leur donnait à boire. Il demande à Joinville qui le regardait faire s'il lavait les pieds aux pauvres le jour du jeudi saint.

"Sire," répondit Joinville, "quel malheur! Les pieds de ce vilains. Je ne les laverai pas—"

"Vraiment," dit le roi, "c'est mal dit, car vous ne devez pas avoir en dédain ce que Dieu fit pour notre enseignement Je vous prie donc pour l'amour de moi que vous vous accoutumiez à les laver."

Fadette. Mon anecdote est aussi à propos des pauvres, Louis.

Louis. Vraiment, veux-tu nous la raconter?

Fadette. Un jour que Saint Louis avait du loisir il dit au Sire de Joinville, "Allons visiter les pauvres."

Quand le roi et Joinville arrivèrent à Château-neuf-sur-Loire, une pauvre vieille femme qui était devant la porte de sa maison et qui tenait un pain à la main, lui dit. "Bon roi, c'est de ce pain venu de ton aumône qu'est soutenu mon mari qui est là dedans malade."

Le roi prit le pain disant, "C'est assez dur pain," et il entra dans la maison pour voir lui-même le malade!

Henri. Toutes nos anecdotes se ressemblent, voici la mienne:

Un vendredi saint, à Compiégne, Saint Louis visitait les églises; ce jour-là selon sa coutume il allait pieds nus et distribuait des secours aux pauvres qu'il rencontrait. Il aperçut, de l'autre côté d'une mare bourbeuse, qui occupait une partie de la rue, un lépreux qui n'osant s'ap-

procher, essayait d'attirer l'attention du roi. Louis traversa la mare, alla au lépreux, lui donna de l'argent, lui prit la main et la lui baisa. Joinville se signa d'admiration en voyant cette témérité du roi, qui n'avait pas craint d'appliquer ses lèvres sur une main que personne n'aurait osé toucher.

Louis. Moi, je vais vous dire quelque-chose de plus gai.

Joinville raconte que Saint Louis était aussi très gai.

Joinville était assis au pied du lit de Saint Louis. Les prêcheurs et les cordeliers qui étaient là lui parlaient d'un livre. "Vous l'entendriez volontiers, Sire," disait un des prêcheurs.

"Non, vous ne me lirez pas, car il n'est ni bon livre après manger, que propos ad libitum, c'est à dire que chacun dise ce qu'il veut." Pourtant Saint Louis aimait beaucoup les livres. Il lisait quant il avait quelque loisir. Quelque fois après dîner il appelait le savant, Robert de Sorbon, le fondateur de la Sorbonne, ainsi que Joinville pour jouir de leur conversation. Un jour Joinville et Robert de Sorbon mangeait à côté du roi et ils causaient bas, l'un avec l'autre. Le roi leur dit, "Si vous parlez en mangeant de choses qui doivent nous plaire, parlez haut, sinon taisez-vous."

M. Lemaître (qui s'est approché du groupe sans être aperçu, gaiement). Dorénavant je veux être des vôtres les jours d'anecdotes historiques. Il se fait tard. La voiture vous attend dans l'allée.

Seventh and Eighth Grades

Nott William Flint

History: For June the class will continue the history of England from the Norman Conquest. So far as possible the historical events will be given to the class through literary presentations. In the case of Richard I., for instance, the character of the man as it is shown in Scott's *Talisman* and *Ivanhoe* will be contrasted with his character as shown in history. The subject will be introduced by the stories of the Angevin kings brought in by different class members. The emphasis, however, will be put, not upon political events or kingly successions, but upon the events which made for the advancement of the whole people's interests.

(A.) Henry II. Queries in connection with the story of Henry: (1) What was the effect of Henry's destroying the illegal castles in England? (2) What was scutage, and how did it effect feudalism? (3) Advantages and disadvantages of the employment of mercenary soldiers? (4) What nations at the present day compel their young men to military service?

I. The story of Thomas à Becket: (Each member of the class will be asked to bring in the best account he can find of this story.) From the many questions which rise from this story, the teacher must choose those he thinks best for class discussion, and for research.

II. Beginning of English conquest of Ireland.

1. Condition of Ireland after the Danish invasions.

2. The four Irish kingdoms.

3. Reasons for Henry's conquest in Ireland. (In this connection the geography of Ireland and perhaps some discussion of its more modern history may be taken up.)

III. Henry's legal reforms.

1. Administration of justice before Henry's time: "Compurgators"; the English trial by ordeal; the Norman trial by combat.

2. Trial by jury: origin of and first important use in England. (Gardener's *History of*

England.) Queries: What is present meaning of "inquest"? How is grand jury chosen and made up, and what are its functions?

(B.) Richard Cœur de Lion and the Crusades. Selections from the *Talisman* and from *Ivanhoe*. Richard's character in history and in the novels. And in connection with Richard the class will, so far as possible, take up the study of the Crusades.

I. Crusades: What they were.

A great movement affecting the whole of Europe—armed pilgrimages.

1. Causes of Crusades: (a) Persecution of pilgrim traders and travelers to the East by the Seljukian Turks. (b) Desire of European princelings to win independent kingdoms for themselves. (c) Immunities granted by Popes to Crusaders. (d) Love of adventure.

2. Changes through which Palestine had passed: Jews, Romans, Christian Romans, Arabian Caliphs—Haroun al Raschid—Seljukian Turks.

3. Routes of Crusaders: (a) Via Italian ports. (b) Via river valleys. (Trace out route of first Crusade—from north central parts of France up the Rhine valley to Neckar; up the Neckar to Ulm; thence down the Danube through Bulgaria to Constantinople, across the Bosphorus, and through Asia Minor to Jerusalem.)

4. Results of Crusades: (a) Broadening of men's minds. (b) Bringing back of marine compass. (c) Rise of Italian cities and of trade generally.

II. Rise of English towns:

1. The big towns of the time—where were they built and why? (See map of the Angevin Empire.)

2. Their charters, industries, and trades.

3. Freedom from rights of lordship.

4. Trade guilds (compare with the modern trade union).

5. Local trade of towns.

6. Effect of foreign immigration.

7. Effect of Norman Conquest on towns.

8. Roads, markets, and market days.

9. What were the exports of England at that time?

10. To whom do the British owe their first knowledge of woolen manufactures?

11. Name some cities in the British Isles famous for woolen manufactures?

12. What did William the Conqueror do to help bring about sheep-raising in England?

(C.) King John. (1) Reasons for the election of John. (2) Death of Arthur and dissolution of the Angevin kingdom. (The class will read here the fourth act of Shakespeare's *King John.*) (3) John's quarrel with the Pope. (Query: Why did the Pope punish the people with an interdict, instead of John?)

I. Magna Charta:

1. What is Magna Charta?

2. What gave rise to it? (Query: How did the new combination of people and barons against the king come to be?)

3. Was England the only country to have a charter? (Query: What was the difference between England's charter and other countries' charters? See Gneist's *History of the English Constitution.*)

4. Why were provisions for the execution of its promises put into the charter?

5. Comparison of British with American constitution.

6. How can changes be made in each? Which is the more flexible?

II. Results of charter:

1. Simon de Montfort, the new leader of the people.

2. The barons' war.

3. Birth of representative parliament.

4. English houses of Commons and of Lords.

5. Comparison of English Parliament with continental and with American ones.

III. Subjugation of Wales: "Prince of Wales."

1. Scottish war of independence. William Wallace and Robert Bruce.

References: Green, *History of the English People;* Stubbs, *English People;* Traill, *Social England;* Mills, *The Crusades*, and *Chivalry;* Thatcher and Schwill, *Middle Ages;* Michaud, *The Crusades*, illustrated by Doré.

Oral Reading: Mrs. Heman's poem on the death of Henry the First's son; Shakespeare's *King John;* Act IV, and selected parts; Scott's *Talisman* and *Ivanhoe*.

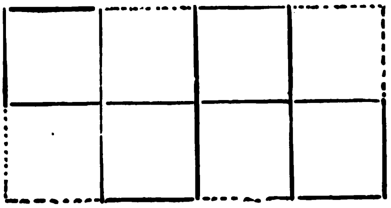
Hand-work: Illustrative scenes on crayon paper, on the blackboard, and on drawing paper. Drawings of castles—plan of a castle.

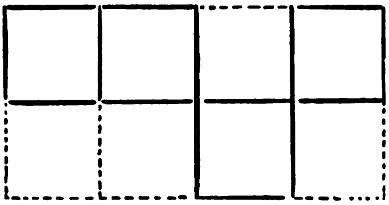
Nature Study: The outline published in May was for June also.

Latin: See High School outline.

French: (MLLE. ASHLÉMAN.) In June the class will take up parts of Molière's lighter comedies.

Petits Jeux





Solution du mois de mai.

Farce du Médecin Malgré Lui

[Sganarelle est un excellent fagotier qui a le tort de battre sa femme. Celle-ci jure de se venger. En ce moment, arrivent deux étrangers qui sont à la recherche d'un médicin assez habile pour guérir la fille de leur maître. La femme de Sganarelle profite de l'occasion et leur désigne son mari comme un grand docteur qui cache sa science et qu'il faut battre pour qu'il en convienne. Qu'à cela ne tienne, il sera battu. En effet, plutôt que de mourir sous les coups de bâton, Sganarelle convient de sa science et on le conduit auprès de la jeune fille.—BONNEFON.]

Sganarelle. Est-ce là la malade?

Géronte. Oui, je n'ai qu'elle de fille; et j'aurais tous les regrets du monde si elle venait à mourir.

Sganarelle. Qu'elle s'en garde bien! Il ne faut pas qu'elle meure sans l'ordonnance du médecin. (*A Lucinde.*) Hé bien! de quoi est-il question? Qu'avez-vous? Quel est le mal que vous sentez?

Lucinde (*répond par signes en portant la main à sa bouche, à sa tête et sous son menton*). Han, hi, hon, han.

Sganarelle. Hé! que dites-vous?

Lucinde (*continue les mêmes gestes*). Han, hi, hon, han, han, hi, hon.

Sganarelle. Quoi?

Lucinde. Han, hi, hon.

Sganarelle (*la contrefaisant*). Han, hi, hon, han, ha. Je ne vous entends point. Quel diable de langage est-ce là?

Géronte. Monsieur, c'est là sa maladie. Elle est devenue muette, sans que jusques ici on en ait pu savoir la cause; et c'est un accident qui a fait reculer son mariage.

Sganarelle. Et pourquoi?

Géronte. Celui qu'elle doit épouser veut attendre sa guérison pour conclure les choses.

Sganarelle. Et qui est ce sot-là, qui ne veut pas que sa femme soit muette? Plût à Dieu que la mienne eût cette maladie! je me garderais bien de la vouloir guérir. (*Se tournant vers la malade*). Donnez-moi votre bras. (*A Géronte.*) Voilà un pouls qui marque que votre fille est muette.

Géronte. Hé oui, monsieur, c'est là son mal; vous l'avez trouvé tout du premier coup.

Sganarelle. Ha! ha!

Jaqueline. Voyez comme il a deviné sa maladie!

Sganarelle. Nous autres grands médecins, nous connaissons d'abord les choses. Un ignorant aurait été embarrassé, et vous eût été dire: c'est ceci, c'est cela; mais moi, je touche au but du premier coup, et je vous apprends que votre fille est muette.

Géronte. Oui: mais je voudrais bien que vous pussiez dire d'où cela vient.

Sganarelle. Il n'y a rien de plus aisé; cela vient de ce qu'elle a perdu la parole.

Géronte. Fort bien. Mais la cause, s'il vous plaît, qui fait qu'elle a perdu la parole.

Sganarelle. Tous nos meilleurs auteurs vous diront que c'est l'empêchement de l'action de sa langue.

Géronte. Mais, encore, vos sentiments sur cet empêchement de l'action de sa langue?

Sganarelle. Aristote, là-dessus, dit—de fort belles choses.

Géronte. Je le crois.

Sganarelle. Ah! c'était un grand homme!

Géronte. Sans doute.

Sganarelle. Grand homme tout à fait (*levant le bras depuis le coude*); un homme qui était plus grand que moi du tout cela. Pour revenir donc à notre raisonnement, je tiens que cet empêchement de l'action de sa langue est causé par de certaines humeurs, qu'entre nous autres savants nous appelons humeurs peccantes; peccantes, c'est-à-dire—humeurs peccantes; d'autant que les vapeurs formées par les exhalaisons des influences qui s'élèvent dans la région des maladies venant—pour ainsi dire—à—Entendez-vous le latin?

Géronte. En aucune façon.

Sganarelle (*se levant brusquement*). Vous n'entendez point le latin?

Géronte. Non.

Sganarelle. *Cabricias, arci thuram, catalamus, singulariter, nominativo, hœc musa,* la muse, *bonus, bona, bonum. Deus sanctus, est-ne oratio latinas?*

Géronte. Ah! que n'ai-je étudié!

Jaqueline. L'habile homme que v'là!

Lucas. Oui, çà est si biau que je n'y entends goutte.

Sganarelle. Or, ces vapeurs dont je vous parle venant à passer du côté gauche où est le foie au côté droit où èst le cœur, il se trouve que le poumon ayant communication avec le cerveau, par le moyen de la veine cave, rencontre en son chemin lesdites vapeurs qui remplissent les ventricules de l'omoplate, et parce que lesdites vapeurs—écoutez bien ceci, je vous conjure.

Géronte. Oui.

Sganarelle. Ont une certaine malignité qui est causée—soyez attentif, s'il vous plaît.

Géronte. Je le suis.

Sganarelle. Qui est causée par l'âcreté des humeurs engendrées dans la concavité du diaphragme, il arrive que ces vapeurs—*Ossabandus, nequeis, potarinum.* Voilà justement ce qui fait que votre fille est muette.

Géronte. On ne peut pas mieux raisonner, sans doute. Il n'y a qu'une seule chose qui m'a choqué! c'est l'endroit du foie et du cœur. Il me semble que vous les placez autrement qu'ils ne sont; que le cœur est du côté gauche, et le foie du côté droit.

Sganarelle. Oui, cela était autrefois ainsi; mais nous avons changé tout cela, et nous faisons maintenant la médicine d'une méthode nouvelle.

Géronte. C'est ce que je ne savais pas, et je vous demande pardon de mon ignorance.

Sganarelle. Il n'y a point de mal; et vous n'êtes pas obligé d'être aussi habile que nous.

Géronte. Assurément. Mais, monsieur, que croyez-vous qu'il faille faire à cette maladie?

Sganarelle. Mon avis est qu'on la remette sur son lit, et qu'on lui fasse prendre pour remède quantité de pain trempé dans du vin.

Géronte. Pourquoi cela, monsieur?

Sganarelle. Parce qu'il y a dans le vin et le pain, mêlés ensemble, une vertu sympathique qui fait parler. Ne voyez-vous pas bien qu'on ne donne autre chose aux perroquets, et qu'ils apprennent à parler en mangeant cela?

Géronte. Cela est vrai! Ah! le grand homme! Vite, quantité de pain et de vin.

Sganarelle. Je reviendrai voir sur le soir en quel état elle sera.

Geography: The work for the year was to be a review of the geography of the world taken up in correlation with the history. The ancient world and southern

Europe was to be studied in connection with Roman history; northern Europe with the history of the British isles; and the rest of the world in the study of the British colonies. Perhaps it is needless to say that scarcely more than half of the outlined work was ever touched by the class, nor indeed was the plan laid down beforehand always followed. To foresee such a plan that should be completely followed has been impossible, at least to this teacher, for the interest of the children has never yielded itself willingly to such sharp prevision. And since the children were considered, as far as possible, in the light of free social agents, they could never be treated as soldiers in a barrack.

Another thing that tended to break the prearranged plan was the unexpected appearance of new and sudden interests on the part of the class. It appears that if the children are not merely following the stale text of some book, the subject of geography, especially when viewed as a background of human action, is ever appealing to lead its students into fresh and unexpected ways. For instance, the class was reading Tacitus's description of Britain in connection with a history lesson. The Latin writer said that the days in Britain were shorter than the days in Rome. Instantly the class took fire, and a controversy rose over the truth or falsity of Tacitus's statement. The teacher, although he had not foreseen this event, judged the class interest of more value than his plan; so the plan gave way, and for three days history and geography yielded to a study of the phenomena of day and night, and their respective lengths. And in that time nearly every member of the class was eager enough to do personal research either in the library or in the laboratory, to prove the truth of his position. Perhaps it is well that the teacher be not too clever in this matter of planning, for much of the strength and vigor of interest comes from its unexpectedness—its surprise of time and occasion.

Whenever a country or place came up for study, the class would get at it in two ways: (1) Given the set of conditions in which that country found itself, what would be the results? (2) What is this place like to us who as travelers visit it? The first question brought out the influences of climate, the agricultural value of the land, the kinds of crops raised, kinds of industrial pursuits, the commerce of the country and its tendency to war with its neighbors, and the probable influence of these things upon its people; and the second question dealt with the topography of the land, its mountains, rivers, and plains, the location of its cities and their distances from one another, the beauty or ugliness of its cities and the kind of people living in them, and their art and architecture.

The class after such a year in geography probably could not pass a good examination on the capitals of the world—though maybe it could—at least no pains has been taken to prepare it for such examination. The whole weight of the study was to get the children to draw inferences from a collection of facts, and to make them keen to see a relation between man and nature.

Music: (MISS PAYNE.) Songs—*Voices of the Woods* (Rubinstein's Melody), *The Violet* (Part Song), *The Sword Song*, *Wha'll be King but Charlie*, in Songs of Life and Nature; *The Happy Farmer*, Third Book, Modern Music Series; *Forge Song*.

The High School

Ninth and Tenth Grades

Latin, Eighth and Ninth Grades: (KATHARINE M. STILWELL.) The class will continue reading the Helvetian War. They have made relief maps of Gaul, and of the Helvetian plateau. These maps will be further used to trace the route taken by the Helvetians, and to locate the events mentioned in the text.

The class will trace the route through the country of the Sequani, between the Jura and the Rhone, and will discuss the effect of this movement upon the Roman province:

1. The Rhone River as a protection.
2. No armed force in that part of the province.
3. The feeling of the Sequani and the Aedui toward the Romans.
4. Influence of Ariovistus.

This will enable the pupils to put themselves in Caesar's place, to consider the various moves possible, and to decide which move would be of the greatest advantage to the Romans.

They will then follow the Helvetians from the plateau down the Rhone valley to the left bank of the Saone, where the Tigurine were destroyed. The building of the bridge at this point will offer an opportunity for an investigation of Caesar's methods.

The events in this valley will be noted, the class presenting as dramatically as possible the speeches made in the conference between Caesar and Divico.

The line of march of the two armies will be followed north through the Burgundian plains up the right bank of the Saone to Macon, which will be considered the point of departure from the river valley. (This route is to the west of the railroad running between Dijon and Macon.)

The skirmish which took place on this march will show the weakness of Caesar's cavalry, while the trouble with the Aedui will enable the class to discover Caesar's habits in regard to his base of supplies and his treatment of his soldiers. On this latter point a comparison will be made between Caesar and Napoleon.

The course through the hills to the region south of Bibracte will be traced. The scene of the final battle will be located upon the hill Armecy, according to the authority of Colonel Stoffel. His plan of the battlefield will also be used in working out the details of the battle.

Drawings of the battlefield will be made by the class; also a clay model showing the Helvetians making their attack upon the Romans drawn up in three lines upon the hillside.

The class will then discuss the effect of this battle upon the whole political and military situation.

History, Ninth, Tenth, and Eleventh Grades: (GUDRUN THORNE-THOMSEN.) The Peloponnesian War and Times of Alexander.

The last topic for study was the Age of Pericles; however great, this period inevitably led up to the Peloponnesian War and its disastrous consequences. The Persian War reveals the best aspects of Greek political institutions, the Peloponnesian War their tragic weaknesses.

Pupils will study causes which brought about this civil war, and its leading events.

Central idea: The Peloponnesian War as a conflict between two agonistic principles—oligarchy represented by Sparta, democracy by Athens.

Points for discussion :

1. What were the real issues in the war ?

2. Reasons why Athens was defeated.
3. Did oligarchy triumph over democracy?
4. Effect of war on Greek states.
5. Changes in Athens and Sparta during this period.
6. How did the war pave the way for Macedonian interference in Greek affairs?
7. Political conditions in Greece during and after war. Decline of public spirit.
8. Hegemony of Thebes.
9. Character study of Alcibiades and Epaminandos.

The children will study about the rise of Macedon and the reign of Philip.

Points for class-work:

1. Policy of Philip in dealing with Greek states.
2. His purpose.
3. Character of Philip.
4. Why did the Greeks fail in their struggle with the Macedonians, when having been able to withstand the Persian invasion?
5. Read and discuss in class abstracts from the Philippics of Demosthenes. What principles did Demosthenes advocate? Story of his life.

Pupils will make themselves familiar with the life and conquests of Alexander.

On a blackboard map Alexander's campaign will be marked off, giving the march of his army, the main battles, and the cities founded by him; the geography of the countries traversed will be considered, and the character of the people as contrasted with that of the Greeks. By taking into consideration the geographical knowledge of the time, the children will appreciate the enormous difficulties of the campaign.

They will make a study of Alexander, and compare Achilles and Alexander. Some of the many stories and anecdotes illustrative of his boyhood and manhood will be related. Plutarch's *Lives* will be read in class. Alexander's greatness as a man, statesman, and soldier will be analyzed.

Points for discussion:

1. Principles underlying federal league under Macedonian supremacy.
2. Why did Alexander turn eastward rather than westward in his conquests?
3. By what motive was Alexander actuated?
4. What were his plans? Were they feasible?
5. Effect of Alexander's conquests on contemporary civilization; growth of Hellenism; effect upon industry and commerce of the time.
6. What was Alexander's work for civilization?

Having finished that period of Greek history which closes with Alexander, the pupils will consider some of the topics given in the outline for April.

Expression: Pupils will write papers on some of the topics given for discussion, also character studies of Alexander and Alcibiades.

Maps will be made showing Alexander's campaign.

Mathematics, Ninth and Tenth Grades: (GEORGE W. MYERS.)

EXPERIMENT NO. 33. To find distance from earth to sun by geometrical methods connected with transit of Venus observations.

(a) Observers are displaced in longitude.

Let S, V, and E denote the sun, Venus, and the earth, respectively.

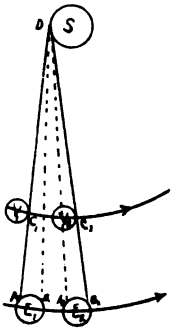


FIG. 30

When Venus is in line with the earth and sun, and between them, she is said to be in *inferior conjunction;* when in line, but beyond the sun, she is in *superior conjunction.* Observation shows that Venus requires 584 days to pass from either conjunction to the same conjunction again. This is the same as saying that it requires Venus 584 days to gain a complete revolution, or 360° on the earth. The daily gain is accordingly $\frac{360}{584}$° = 37′ (nearly); or 1′ 32″.5 per hour.

Two observers at stations A and B as far separated in longitude as possible on the earth; note the instant when Venus touches the solar disk. Of course, the easternmost observer at A_1 sees the beginning of the transit first. Venus moves onward in her orbit to V_2, when the western observer sees the first contact of Venus with the sun's disk. Evidently Venus, in the meanwhile, has gained the angle A_2DB_2 on the earth. If an observer were at D, this is the angle under which the chord A_2B_2 of the earth would be seen by him. If the observers at A and B are 6,060 miles apart in a straight line (and a former experiment has taught us how to compute this distance), and the angle is found to be 13″.2, since any magnitude must be 15,500 times its own dimension from the observer to open up 13″.2 at his eye (see Exp. No. 4), the distance to the sun DA (or DB) equals 15,500 × 6,000 = 93,000,000 miles. This exercise may be studied concretely by cutting out three wooden disks and attaching strings by light staples, carpet-tacks, or pins, as the lines are drawn in the cut.

Using the data of any table of planetary elements and substituting in the problem, work through and check the value of the distance from the earth to the sun.

(b) Observers displaced in latitude.

To obtain as long a base line as possible one observer should select a station as B in as high northern latitude as possible, and the other at C in as high southern latitude as possible. (EQ denotes equator.)

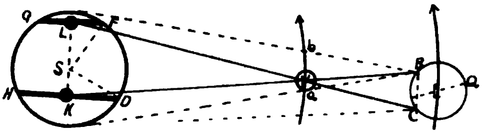


FIG. 31

To an observer at the northern station B, at the time of a transit, Venus will be seen projected on the disk of the sun, while she is crossing a cone whose vertex is at the observer, B, and whose elements are tangent to the sun's surface. Experiment No. 30 will show that Venus is at 0.72 of the earth's distance from the sun, so that the cone where Venus crosses it is only 0.23 of the solar diameter. The line ab, seen from B, is 32′.04″ on the average, *when the transit is central.* Seen from S, the line ab would then have the angular magnitude $\frac{23}{72}$ × 32′.04″ = 10′ 14″.6. (See under "a.") The hourly gain of Venus on the earth is 1′32″.5 on the average, and the duration of a transit of Venus, which is central, is then 6.64 hours. The duration of other transits will sustain such a ratio to 6.64 hours as the lengths of the chords of the solar disks traced by Venus's projection on the sun during transit sustain to the angular solar diameter 32′.04″.

This latter diameter is directly measurable in terms of angular units, and the chords traversed by the projection of Venus are readily computed from it.

If then viewed from C in high south latitude, Venus seems to describe a path such as FG, and from B a path such as DH, computing the times of transit with 6.64 hours, we find the ratio to 32′.04″ of the lengths of these arcs in angular value (SD and SF being 16′.02″). SK and SL are readily found by the Pythagorean Proposition.

[Note: GF is to $2SD$ as the time of transit along GF is to 6.64 hours.]

Angles BVC and DVF being equal, and BC and LK, or FD being supposed parallel, we have the triangles BVC and FVD similar; hence:

$$\frac{FD}{BC}=\frac{VB}{VS}=.\frac{25}{72}, \text{ or } FD=0.35\ BC.$$

The observers B and C know their latitudes and longitudes and compute the length of BC. The line FD then becomes known in miles. Knowing, then, the length of FD in both degrees and miles, we compute, then, how many degrees and miles there are in LK and how many miles in SD, and we then have how many seconds one mile or 4,000 miles correspond to when seen over the distance from earth to sun. It is found that 4,000 miles viewed from the earth-sun distance would subtend an angle at the eye of 8″.8. But experiment No. 4 would show us that to make any magnitude open up 8″.8 at the eye it must be placed 23,250 × its own length from the observer. Hence the distance to the sun is 23,250 × 4,000 miles (roughly) = 93,000,000 miles.

Cut out two circular wooden disks such as BQC and $FGHD$, and fasten two strings with staples, one at B and D and the other at C and F. Running the strings through a bead at V, the problem may be made to stand out before the eye concretely. Globes will be better than disks if they are available.

EXPERIMENT NO. 14.5*. To measure the altitude of the sun.

Cut from inch stuff and surface two boards of dimensions shown in the cut. Square up one edge, *PN*, of the square board to an accurate right angle with the adjacent face *MNPO*.

By the aid of the wedges place the rectangular board horizontal (indicated by pouring a little water upon it), and then set the square board edgewise upon it and edgewise to the sun in such position as to make the shadow at *s* as narrow as possible. Stick a pin in face of the vertical board at *a* about 2" from the edge *PN*. Now, stick a second pin at *b* so that its shadow shall fall upon that of pin *a*. Turn the board about so that edge *OP* shall be toward the sun, and make the shadow *s* its narrowest again. Stick a third pin at *c*, as the pin *b* was placed formerly. Through the pin-marks draw the lines *ab* and *ac*, and with a protractor measure the angle *bac*. One-half of this angle will be the angular distance from the sun to the zenith for the mean of the times of sticking the pins at *b* and *c* respectively. Why?

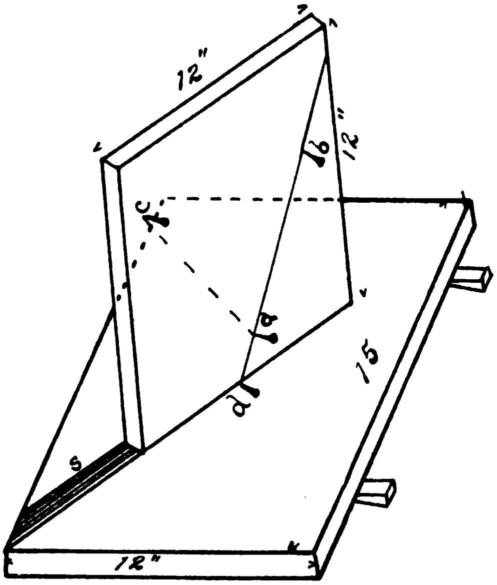


FIG. 14.5

Subtract this half angle from 90° and the difference will be the altitude of the sun above the horizon for the same time. Why?

One-half of the exterior angle *cad* will also be the altitude. Why?

EXPERIMENT No. 14.6*. To construct a graph for the altitudes all day.

Let a number of students execute the foregoing experiment for eight, nine, ten, eleven, and twelve, one, two, three, and four o'clock. Work to nearest minute. Lay off the times on a horizontal line as shown in the figure, and the measured altitudes on vertical lines corresponding to the times, and draw a continuous line through the points thus located. Drawing any horizontal line, as A B, and bisecting it with a perpendicular, the intersection of the perpendicular with the curve will indicate the time by the clock used at which the sun's altitude was greatest.

By measuring the vertical distance from the horizontal line C D up to the curve we have the altitude for any time during the day.

The entire curve brings before the eye the law of the sun's variation of altitude for the day.

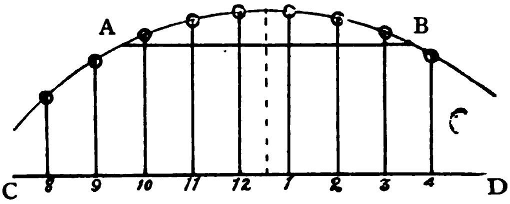


FIG. 14.6

Such curves, made at different seasons and compared, are instructive in many ways.

THE PRECESSIONAL GLOBE.

Description: *P*. The north pole of the heavens. *Q*. The north ecliptic pole. *R*. Brass circle with center at pole of ecliptic, radius, 23½°. *M*. Meridian graduated to degrees. *S*. Scale graduated on one edge to miles and on other to degrees. *T*. Thumb-screw to carry and clamp *S* along meridian. *H*. Wooden horizon, graduated. *E*. Equator. *C*. Ecliptic, and *D*, sliding support to *M*.

The circle *R* is perforated with 26 equally spaced holes, extending entirely around it, and around the south ecliptic pole is another precisely similar circle. At *P* is a pin, held in place by a spring, which may be set in any one of the 26 holes, a similar pin being first set in the diametrically opposite hole of the south pole circle.

Since the precessional motion carries the poles of the heavens around these circles once in 26,000 years, the spaces between adjacent holes corresponds to the motion of the poles during 1,000 years. It is therefore possible to bring the globe into such positions as to represent the aspect of the celestial motions about the instantaneous pole positions for any integral

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*Experiments No. 14.5 and 14.6 are from Comstock's *Textbook of Astronomy*.

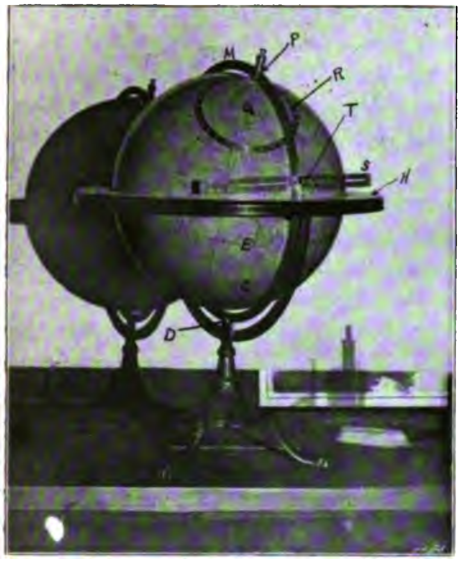


FIG. 32. PRECESSIONAL GLOBE.

number of thousands of years of the past or future. The positions of the poles for *any* epoch may be represented on this globe, while on an ordinary globe they can be represented for only a *single* epoch. The following important astronomical facts may be visualized by proper settings of the globe:

1. The revolution of the First of Aries through the signs of the zodiac.
2. The revolution of the celestial pole about the ecliptic pole.
3. Changes in the right ascensions and declinations of the stars.
4. Changes in the longitudes of the stars, but not in their latitudes.
5. The tropical year is shorter than the siderial year.

Exercises to be solved with the precessional globe.

EXPERIMENT NO. 34. To determine the Polestar at any given epoch.

(a) What star was nearest the north celestial pole when the great pyramid of cheops was built 6,000 (?) years ago?

(b) What star was nearest 1400 years ago? 1400 B. C.? 8500 B. C.? 14000 B. C.?

(c) When will Vega be the Polestar?

EXPERIMENT NO. 35. To draw the celestial equator at a given epoch.

This can be best done by means of the spherical blackboard fitted with the precessional circles.

Set the pole pins into the sockets corresponding to the epoch. Then with a crayon, or camel's-hair brush moistened with water-color, held against the $O°$ of the meridian and touching the globe, roll the globe once around. If a number of equators for different epochs are thus drawn, the significance of the precession of the equinox becomes obvious.

Draw the equators for 500 B. C.; 10000 B. C.; and for 5000 A. D.

EXPERIMENT NO. 36. Find the right ascension and declination of stars for any epoch.

Set the pole pins to the given epoch as before, and bringing the star under the brass meridian, *M*, the declination may be read off directly.

For right ascensions elevate the celestial pole at an angle of 90° to the horizon. The horizon will then indicate the position of the celestial equator for that epoch. Now bring the poles of the ecliptic under the meridian, the north ecliptic pole being south of the north celestial pole. The point on the ecliptic coinciding with the east point of the horizon will then denote the first of Aries for the epoch. By means of the strip, *S*, read off along the horizon the number of degrees from the first of Aries to the brass meridian, *when the star has been brought under this meridian.* Dividing the number of degrees by 15 will give the right ascension in hours, minutes, and seconds.

(a) Find for the epochs 1000 A. D. and 10000 B. C. the right ascensions and declinations of the following stars: Arcturus, Aldebaran, Sirius, Procyon, Canopus.

EXPERIMENT NO. 37. To find the azimuths of stars at rising or setting for any required epoch.

Set the globe as before and rectify it for the latitude of the place of observation. Then bring the required stars to the eastern or western horizon according as the rising or setting azimuth is wanted. Read off the azimuth along the wooden horizon.

(a) Determine the azimuth at Thebes (Lat. 25°40′ N.) of the Pleiades, Sirius, and Gamma Draconis and other stars, for 1000 B. C. and 3000 B. C.

(b) Repeat the above measures for the latitude of Chicago (41°50′).

French, Ninth and Tenth Grades: (LORLEY ADA ASHLÉMAN.) After the reading of *La Dernière Classe* and *Le Siège de Berlin*, the children of the Ninth and Tenth grades, in memorizing the little scene "d'un comique parfait," from *Don*

Juan, will not only have an entire change of style and thought, but will also have an opportunity to appreciate the spirit of French comedy.

In connection with their study of Molière, they will read also the accompanying anecdote, entitled *Molière le Père de la Comédie Française.*

Molière le Père de la Comédie Française

L'acteur anglais, Kemble, étant venue en France en 1800, fut invité par ses camarades français à un grand dîner. La conversation tomba naturellement sur le théâtre. On passa en revue les époques, les genres, et enfin les auteurs. Les Français, en gens bien élevés, payèrent à Shakespeare leur tribut d'hommages.

L'un d'eux, cependant, patriote avant tout, lança le nom de Molière. L'acteur anglais répondit froidement: "Molière n'est pas un Français." Etonnement de tous. " Expliquez-vous. Est-ce que par hasard Molière serait un Anglais ?"

" Pas plus Anglais que Français."

"Mais alors ? "

"Je me figure que Dieu dans sa bonté, voulant donner au genre humain le plaisir de la comédie, créa Molière, et le laissa tomber sur terre, en lui disant: ' Homme, va peindre, amuser, et si tu peux corriger tes semblables.' Il fallait bien qu'il descendît sur quelque point du globe, de ce côté du détroit ou bien de l'autre, ou bien ailleurs. Nous n'avons pas été favorisés; c'est de votre côté qu'il est tombé. Mais il n'est pas plus à vous qu'à personne; il appartient à l'univers."

Charade

Solution de la charade du mois de mai "passerau."

Comédie de Don Juan

[Cette scène excellente est d'un comique parfait: celle où Don Juan éconduit son débiteur M. Dimanche.]

Don Juan. Ah! monsieur Dimanche, approchez. Que je suis ravi de vous voir, et que je veux de mal à mes gens de ne vous pas faire entrer d'abord! J'avais donné ordre qu'on ne me fît parler à personne; mais cet ordre n'est pas pour vous, et vous êtes en droit de ne trouver jamais de porte fermée chez moi.

Monsieur Dimanche. Monsieur, je vous suis fort obligé.

Don Juan (*parlant à la Violette et à Ragotin*). Parbleu! coquins, je vous apprendrai à laisser monsieur Dimanche dans une antichambre, et je vous ferai connaître les gens.

M. Dimanche. Monsieur, cela n'est rien.

Don Juan. Comment! vous dire que je n'y suis pas, à monsieur Dimanche, au meilleur de mes amis!

M. Dimanche. Monsieur, je suis votre serviteur. J'étais venu—

Don Juan. Allons, vite, un siége pour monsieur Dimanche.

M. Dimanche. Monsieur, je suis bien comme cela.

Don Juan. Point, point, je veux que vous soyez assis contre moi.

M. Dimanche. Cela n'est point nécessaire.

Don Juan. Otez ce pliant, et apportez un fauteuil.

M. Dimanche. Monsieur, vous vous moquez; et—

Don Juan. Non, non, je sais ce que je vous dois; et je ne veux point qu'on mette de différence entre nous deux.

M. Dimanche. Monsieur—

Don Juan. Allons, asseyez-vous.

M. Dimanche. Il n'est pas besoin, monsieur, et je n'ai qu'un mot à vous dire. J'étais—

Don Juan. Mettez-vous là, vous dis-je.

M. Dimanche. Non, monsieur, je suis bien. Je viens pour—

Don Juan. Non, je ne vous écoute point si vous n'êtes assis.

M. Dimanche. Monsieur, je fais ce que vous voulez. Je—

Don Juan. Parbleu! monsieur Dimanche. Vous vous portez bien.

M. Dimanche. Oui, monsieur, pour vous rendre service. Je suis venu—

Don Juan. Vous avez un fonds de santé admirable, des lèvres fraîches, un teint vermeil et des yeux vifs.

M. Dimanche. Je voudrais bien—

Don Juan. Comment se porte madame Dimanche, votre épouse?

M. Dimanche. Fort bien, monsieur, Dieu merci.

Don Juan. C'est une brave femme.

M. Dimanche. Elle est votre servante, monsieur. Je venais—

Don Juan. Et votre petite fille Claudine, comment se porte-t-elle?

M. Dimanche. Le mieux du monde.

Don Juan. La jolie petite fille que c'est? Je l'aime de tout mon cœur.

M. Dimanche. C'est trop d'honneur que vous lui faites, monsieur. Je vous—

Don Juan. Et le petit Colin, fait-il toujours bien du bruit avec son tambour?

M. Dimanche. Toujours de même, monsieur. Je—

Don Juan. Et votre petite chien Brusquet, gronde-t-il toujours aussi fort, et mord-il toujours bien aux jambes les gens qui vont chez vous?

M. Dimanche. Plus que jamais, monsieur.

Don Juan. Ne vous étonnez pas si je m'informe des nouvelles de toute la famille; car j'y prends beaucoup d'intérêt.

M. Dimanche. Nous vous sommes, monsieur, infiniment obligés. Je—

Don Juan (*lui tendant la main*). Touchez donc là, monsieur Dimanche. Êtes-vous bien de mes amis?

M. Dimanche. Monsieur, je suis votre serviteur.

Don Juan. Parbleu! je suis à vous de tout mon cœur.

M. Dimanche. Vous m'honorez trop. Je—

Don Juan. Il n'y a rien que je ne fisse pour vous.

M. Dimanche. Monsieur, vous avez trop de bontés pour moi.

Don Juan. Et cela est sans intérêt, je vous prie de le croire.

M. Dimanche. Je n'ai point mérité cette grâce, assurément. Mais, monsieur—

Don Juan. Oh! çà, monsieur Dimanche, sans façon, voulez-vous souper avec moi?

M. Dimanche. Non, monsieur, il faut que je m'en retourne tout à l'heure. Je—

Don Juan (*se levant*). Allons, vite un flambeau, pour conduire monsieur Dimanche; et que quatre ou cinq de mes gens prennent des mousquetons pour l'escorter.

M. Dimanche (*se levant aussi*). Monsieur, il n'est pas nécessaire, et je m'en irai bien tout seul. Mais—

Don Juan. Comment? Je veux qu'on vous escorte, et je m'intéresse trop à votre personne. Je suis votre serviteur, et, de plus, votre débiteur.

M. Dimanche. Ah! monsieur—

Don Juan. C'est une chose que je ne cache pas, et je le dis tout le monde.

M. Dimanche. Si—

Don Juan. Voulez-vous que je vous reconduise?

M. Dimanche. Ah! monsieur, vous vous moquez! monsieur—

Don Juan. Embrassez-moi donc, s'il vous plaît. Je vous prie encore une fois d'être persuadé que je suis tout à vous, et qu'il n'y a rien au monde que je ne fisse pour votre service.

German, Ninth and Tenth Grades: (DR. SIEGFRIED BENIGNUS.) For exercises in grammar—especially in irregular verbs—in oral and written expression, the present condition of Greece will be studied.

Memorizing:

Das Lied der Deutschen

Deutschland, Deutschland über alles, über alles in der Welt,
Wenn es stets zu Schutz und Trutze brüderlich zusammenhält,
Von der Maas bis an die Memel, von der Etsch bis an den Belt—
Deutschland, Deutschland über alles, über alles in der Welt!

Deutsche Frauen, deutsche Treue, deutscher Wein und deutscher Sang
Sollen in der Welt behalten ihren alten schönen Klang
Und zu edler That begeistern unser ganzes Leben lang—
Deutsche Frauen, deutsche Treue, deutscher Wein und deutscher Sang.

Einigkeit und Recht und Freiheit für das deutsche Vaterland,
Danach lasst uns alle streben brüderlich mit Herz und Hand!
Einigkeit und Recht und Freiheit sind des Glückes Unterpfand—
Blüh'im Glanze dieses Glückes, blühe, deutsches Vaterland!

—*Hoffmann aus Fallersleben, 1841.*

Eleventh and Twelfth Grades

French, Eleventh and Twelfth Grades: (LORLEY ADA ASHLÉMAN.) Translation, clear, accurate, simple, adequate yet idiomatic, is not only the best test of the knowledge of both idioms, but it is a work of art as well as science, and of conscience too, disciplining the highest powers of insight, skill, and taste, both in thought and expression. As a training in the mother tongue, it is superior to all the devices of rhetoric. There is no other discipline incident to language-study so valuable as translation rightly conceived, yet there is nothing more harmful than those miserable verbal paraphrases which, under the utterly false name of "literal translation," are so often not only allowed but required.

Such a translation is false alike to the foreign and to the native language. Only idiom can translate idiom, or style translate style. It is only by doing our best that we can truly conceive the ideal and the unattainable.

The discovery of a family history of one of the pupils—a family history connected with one of the most exciting and tragic periods in French history—suggested the material for translation work.

A most interesting, true story will be given to the different French classes by translating the tale of the thrilling, romantic escape from the Bastile and final settlement in America of a man—the great-grandfather of one of the pupils—who, for loyalty to his king, was condemned to the guillotine.

Joseph Alexandre de Chabrier de Peloubet

Joseph Alexandre de Chabrier de Peloubet, l'ancêtre de la famille Peloubet aux Etats-Unis est né le quatre mars mil sept cent soixante quatre au Château de Peloubet à un mille de Lauzun, ville du Lot et Garonne, à mi chemin entre Bordeaux et Agnes.

Selon les régistres de la mairie, c'était le onzième enfant et le cinquième fils du noble Michel François de Chabrier, écuyer et sieur de Peloubet et de Madame Marguerite de Vendeuil, fille, selon son rapport du duc ou comte de Vendeuil.

Deux de ses frères servirent dans la grade du corps du Roi Louis XVI., mais Alexandre était trop court de taille pour y'être reçu, quoiqu'il s'adressât au roi pour obtenir l'appointement. N'ayant pas de succès de ce côté là, il s engagea comme correspondant dans la maison commerciale de Dubreuil et Dubret à Bordeaux, et il passa sa vie sur mer jusqu' à l'âge de vingt-neuf ans, mil sept cent soixante quatre, visitant les Indes Occidentales la plupart du temps.

La Révolution française éclata, et il retourna chez lui pour assister le roi contre la révolte d'un peuple aimant la liberté. L'âge avancé de

son père le décida à occuper une position neutre. Pendant quelque temps il évita le danger, plus tard il fut emprisonné dans la Bastille par les révolutionnaires. Il mourut à l'âge de quatre-vingt cinq ans.—MARGARET NORTON.

Pendant les trois années que Joseph Alexandre était dans l'armeé royale on dit qu'il a été engagé dans treize batailles. Sa division était à la frontière d'Allemagne quand le roi s'y trouvait. Dès que la nouvelle de sa mort leur arriva les soldats se dispersèrent sur le champ et on permit à chaque soldat de se trouver une place de sûreté.

Joseph Alexandre s'enfuit en Allemagne. Après quelque temps il retourna chez lui, sûr que l'excitation s'était calmée et qu'il serait en sûreté. Il se trompa, aprés n'avoir été avec sa famille que peu de temps il fut arrêté comme aristocrate et ami des royalistes. On le jeta en prison, il fut examiné et condamné à la guillotine.

Le jour était fixé pour son exécution. Elle devait avoir lieu au lever du soleil. Vers minuit, quelques heures avant le moment fatal le geôlier, probablement corrompu par des amis, vint à sa cellule et le conduisit silencieusement dans une grande chambre meublée d'une chaise et d'une table sur laquelle était une chandelle allumée. Ce changement s'était opéré si vite et si silencieusement qu'il lui semblait rêver. Revenant de sa surprise il était sûr qu'on proposait son évasion. Il chercha une parte secrète dans le mur, quelques planches détachées dans le plancher, mais en vain. S'asseyant sur une chaise il renonçait à tout espoir quand il lui arriva de regarder derrière la table.—JOHN NORTON.

Il la déplaça et trouva un trou dans le mur. Il s'y enfonça à corps perdu et tomba à terre, quelques dix pieds, se blessant un peu. Quand il se leva il trouva qu'il était hors de prison et bientôt il gagna la rue.

Il tressaillit quand un homme à cheval s'approcha et qu'il lui dit en passant, "Sous cet arbre là vous trouverez un cheval et un passe-port." Il ne pouvait pas comprendre ce que cela voulait dire mais il se décida d'y aller. Sous l'arbre il trouva un passe-port, un cheval, et une charrette de colporteur. Sans recherche et délai il monta à cheval et se mit en route ne doutant plus que tout avait été arrangé pour lui. Il n'a jamais su à qui il devait son évasion, mais quand le soleil se levait qui devait être témoin de son exécution il était à une bonne distance de sa prison et bientôt sous la déguise d'un colporteur il était en Allemagne où il demeura plusieurs années. Pour son maintien il apprit à faire des instruments musicals, tels que la flute, le fifre, et le clairon, occupation qu'il continua pour la plus grande partie de sa vie.—ELSIE HENNE.

Mathematics, Eleventh and Twelfth Grades: (GEORGE W. MYERS.) This month will be given to a review of geometry, with especial emphasis upon applications. The shortness of the time which remains for this work will make possible little more than to point out the need for geometry in practical affairs, and to give an insight into the practical reasons for learning it.

So far as possible when a practical problem has been solved geometrically, the trigonometrical solution will also be given. Many of the exercises and problems will relate to the earth as a sphere, to topographic surveying, to astronomical and physical questions. The following headings will suggest the source from which the subject-matter will be largely drawn:

1. Theory of the sextant.
2. Theory of time and its determination.
3. The mathematics of triangulation.
4. Theory of the cylinder, cone, and sphere as applied in geography (map projection), architecture, and engineering (type forms).
5. Applications to earth, moon, and sun.
6. Theory of triangle, parallelogram, polygon, and polyhedron applied to the laws of force, and to the subject of center of gravity.
7. Review of abstract geometry with reference to these seven principles:
   (a) Equality by superposition (Congruency).
   (b) Inequality, how established.
   (c) Measurement of central and inscribed angles.
   (d) Theory of proportionality and of parallels.
   (e) Areas of plane figures all reduced to the triangle.
   (f) Principle of limits.
   (g) Reduction of solid, or space, geometry to plane geometry by analysis of figures.

The object of the review is to revive and bind together the trunk lines of thought

running through the subjects of geometry and trigonometry, and to give the pupils a respect, which lies close enough to their experience to make an appeal, for the power which comes to the one who makes the matter, method, and spirit of the subject his own. No hesitancy will be entertained by the teacher to emphasize the utilities of the subject from the fear of converting the admittedly beautiful logic of the subject into a sordid agency for personal gain, because while the thinker *should* be a practical man, the practical (not so-called) man *must* be a thinker.

Domestic Science, Eleventh and Twelfth Grades: (ALICE P. NORTON.) The work this spring has been a study of the house as one factor in the home. During the last week some time has been spent on the drawing of house plans and their discussion. Each member of the class has made the plan of a city or country house, or a city flat; these have been brought to the class, and talked over and criticised there, especially with reference to the adaptation of each to its situation and to the needs of the family who are to live in it, to its general convenience, and to the amount of light and sunshine which can enter it.

A visit has been made to a large apartment building in the city, so well planned that every room is lighted by an outside window. In this same building the class saw the plants for artificial refrigeration, and for heating and lighting the building.

One lesson has been spent in a walk on the Lake Shore Drive, with Mr. Duncan, studying the different styles of architecture to be found, and their adaptation to dwelling-houses. As most of the class know nothing of architecture, the next lesson will be pictures from the stereopticon, illustrating the historic styles; later various walks in the city will be taken, and the houses criticised not only from the point of view of style, but of adaptation to their purpose.

Some study will also be made of the furnishing of the house. Especial emphasis will be laid upon simplicity and the possibility of beautiful effects with a small expenditure of money. Each pupil will be asked to choose the colors and furnishings for a room, taking into consideration the lighting, proportions, and purpose of the room, and to make a drawing of it. Use will be made of these drawings in the kindergarten and grades.

Special topics, such as ventilation, heating, plumbing were assigned the pupils early in the quarter. These will be reported on and discussed, as far as time allows.

Chemistry, Eleventh and Twelfth Grades: (ALICE P. NORTON.) Work with the minerals has led to the further study of the metallic elements and to their industrial uses. The examination and identification of some iron pyrites, picked up on the lake shore during an excursion, began the study of the ores of iron and of its various compounds. The study of ferrous and ferric salts, and the oxidization of one to the other; the tests for iron, the examination of different substances (bluing, for example) for its presence; the removal of iron rust, and similar work, has given opportunity for both discussion and laboratory work. The iron industries, in which the class have expressed interest, will be considered next, and a visit will be made to some rolling mills.

Much of the time for this month will be spent upon the industrial applications of chemistry, and several field-trips will be made. On the other hand, the questions of the class are bringing out more fully than before some of the theoretical sides of the science.

Music. High School: (MISS PAYNE.) Songs: *Spring Song* (duet), Abt; *The*

Violet (duet), Songs of Life and Nature; *Voices of the Woods* (Rubinstein's Melody in F); *The Forge.* Voice work; exercises in the open vowel sounds, with sustained breath; scales and arpeggios, for ear and voice, with open vowel sounds; sight reading of new songs, with the difficult passages worked out on the scale tones.

Morning Exercises

JUNE	SUBJECT	LEADER
4.	Animal Life	Mr. I. B. Meyers.
5.	Summer Sports	Miss Crawford.
6.	Chivalry	Mr. Flint.
7.	Current Events	Miss Fleming.
11.	Magazine Illustration	Miss Hollister.
12.	Florence, The City Beautiful	Mrs. Flint.
13.	Kipling	Mr. Bass.
14.	Current Events	Miss Allen.
18.	June	Miss Van Hoesen.
19.	Flowers of France	Mlle. Ashléman.
20.	The Summer Solstice	Miss Baber.
21.	Current Events	Miss Champlin.

Historical Events and Birthdays

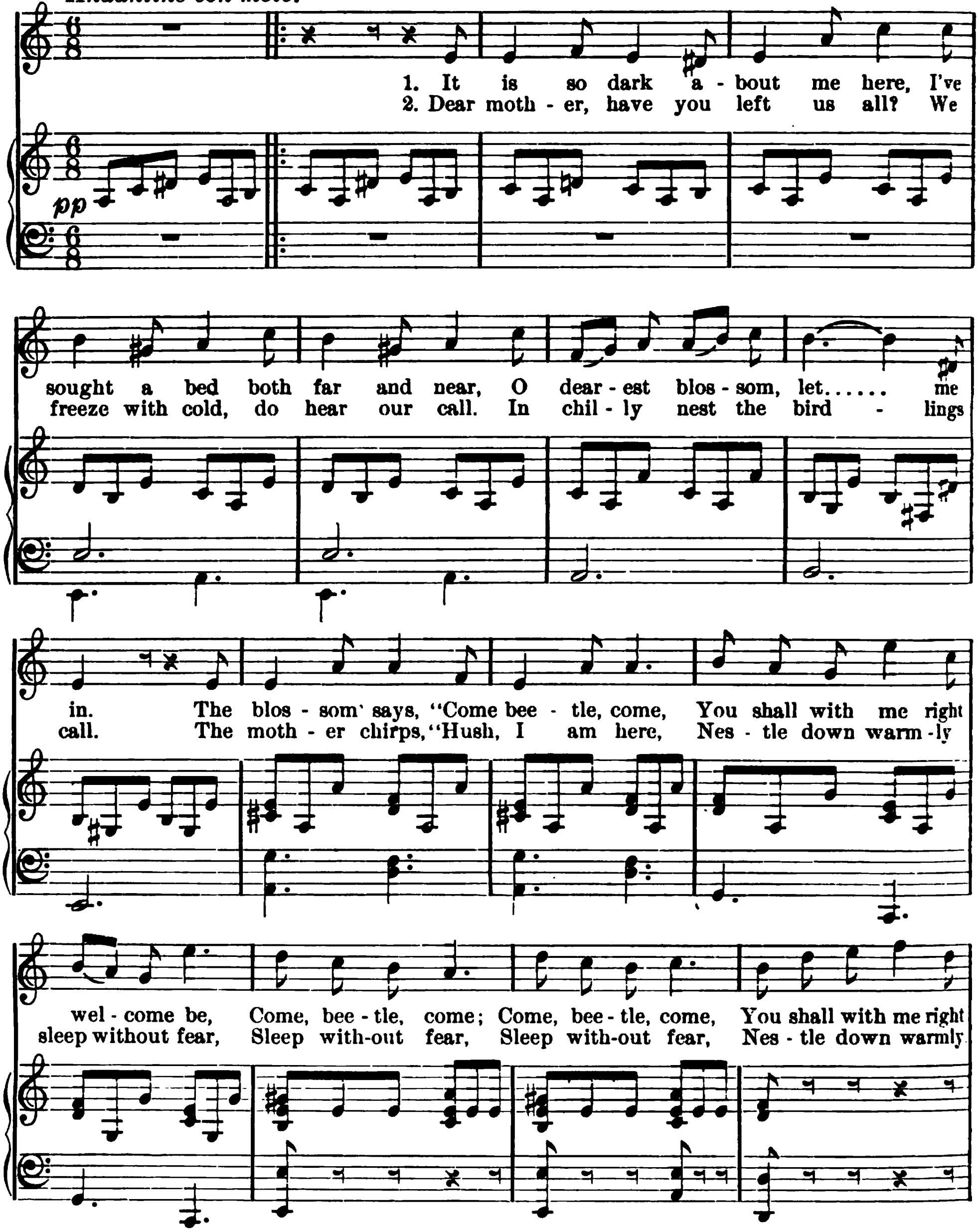
June	2	Dr. James Hutton	1726
"	4	George III.	1738
"	5	Socrates	468
"	6	Velasquez	1599
"	9	J. Howard Payne	1792
"	12	Harriet Martineau	1802
"	17	John Wesley	1703
"	19	Chas. Kingsley	1819
"	24	Henry Ward Beecher	1813

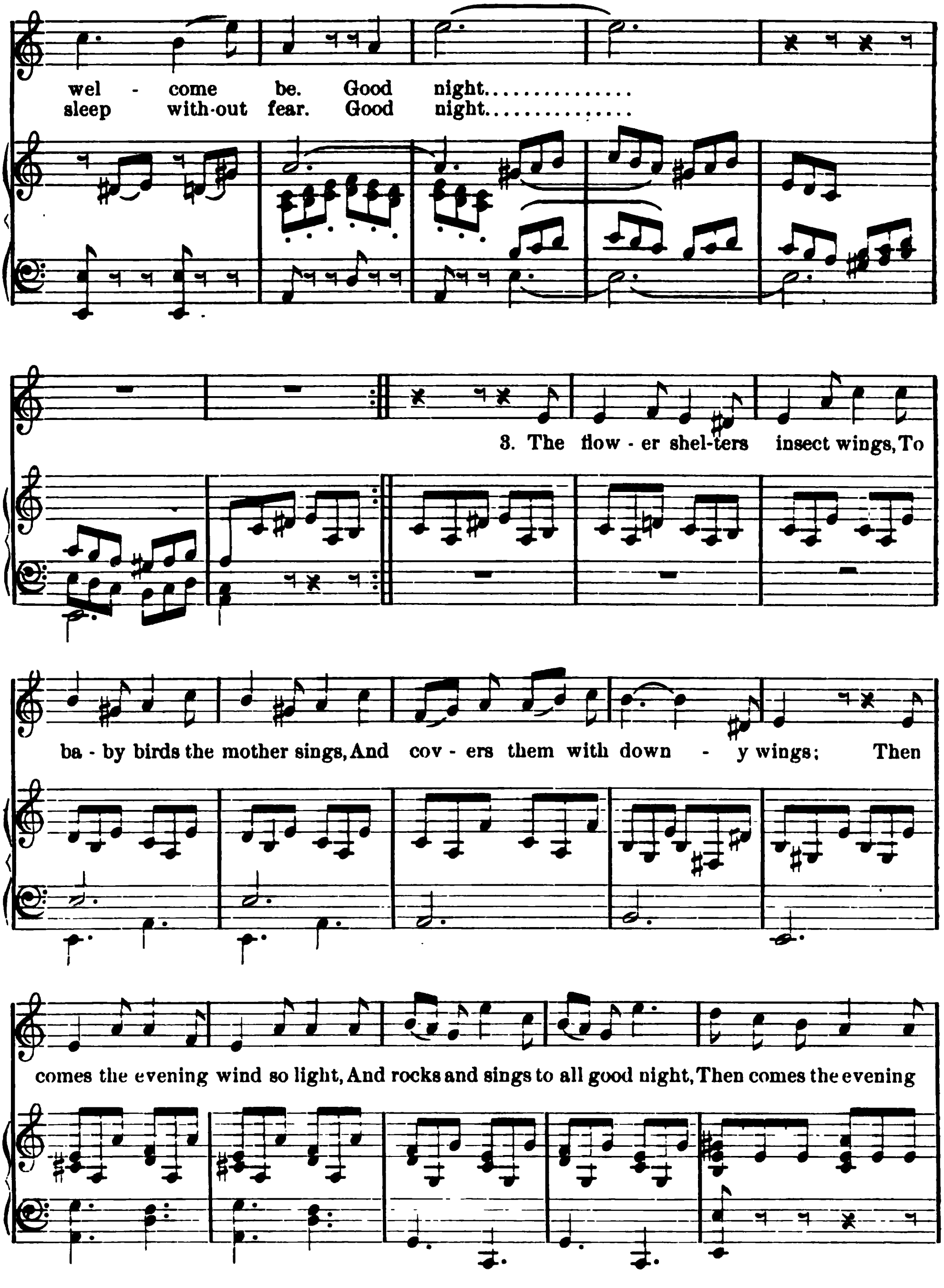
Good Night

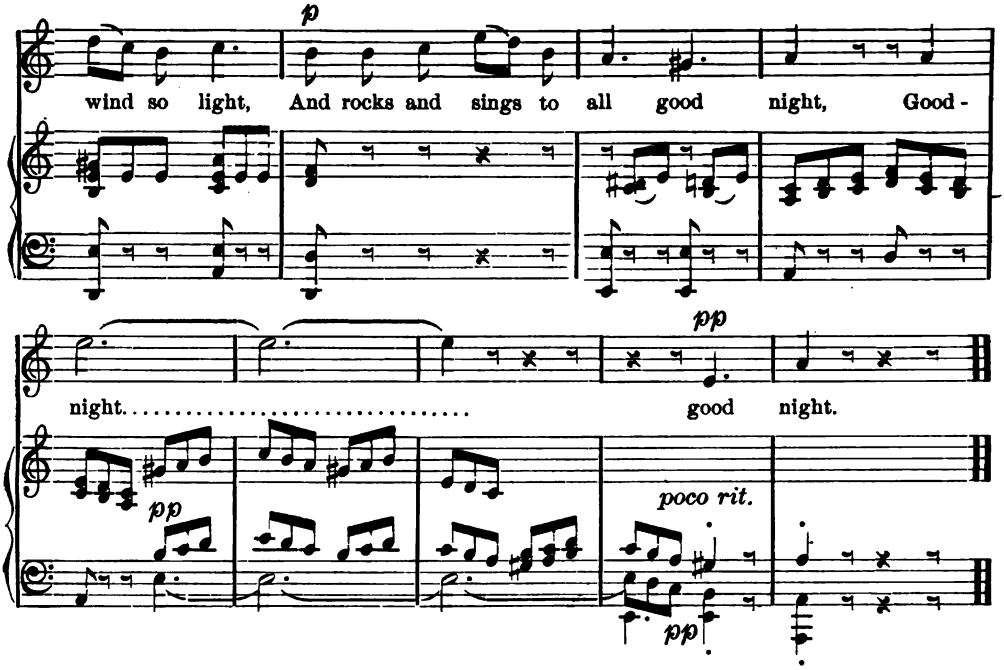
From the German of Lowenstein.
Tr. by Bertha Payne.

W. Taubert.

Andantino con moto.

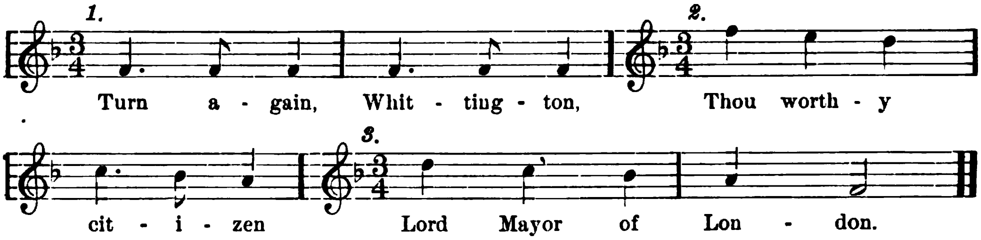

pp
1. It is so dark a - bout me here, I've
2. Dear moth - er, have you left us all? We
sought a bed both far and near, O dear - est blos - som, let...... me
freeze with cold, do hear our call. In chil - ly nest the bird - lings
in. The blos - som' says, "Come bee - tle, come, You shall with me right
call. The moth - er chirps, "Hush, I am here, Nes - tle down warm - ly
wel - come be, Come, bee - tle, come; Come, bee - tle, come, You shall with me right
sleep without fear, Sleep with-out fear, Sleep with-out fear, Nes - tle down warmly


wel - come be. Good night................
sleep with-out fear. Good night................
3. The flow - er shel-ters insect wings, To
ba - by birds the mother sings, And cov - ers them with down - y wings; Then
comes the evening wind so light, And rocks and sings to all good night, Then comes the evening

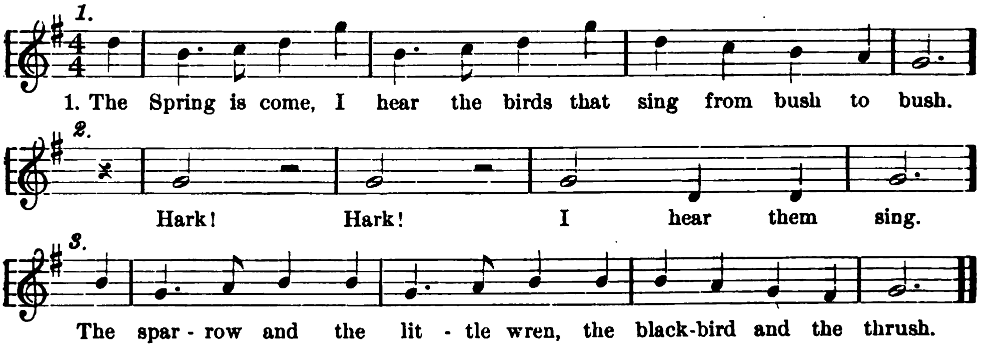

p
wind so light, And rocks and sings to all good night, Good-
night.................................. good night.
pp
pp
poco rit.
pp

Rounds

No. 1.


1.
Turn a - gain, Whit - ting - ton,
2.
Thou worth - y cit - i - zen
3.
Lord Mayor of Lon - don.

No. 2.


1.
1. The Spring is come, I hear the birds that sing from bush to bush.
2.
Hark! Hark! I hear them sing.
3.
The spar - row and the lit - tle wren, the black-bird and the thrush.

3 2044 096 995 931

DISCARDED